1907 (8) I

A Rational Dietary for Infants.

This series of Foods has been designed to supply for the first time a need in the rational dietary of infants fed by hand. None of the substitutes for mother's milk have hitherto been physiologically accurate. Especially is this so with the diluted cow's milk given usually in the earlier days of infant life.

The following table enables one to appreciate the difference between—

Cow's Milk—as sold in Towns.		Human Milk—direct from Breast.	
Reaction.	Acid	Reaction.	Alkaline
Specific gravity	1·031	Specific gravity	1·027
Water	87·0	Water	87·5
Fat	3·5	Fat	3·8
Casein	3·0	Casein	1·0
Albumin	0·5	Albumin	1·2
Milk Sugar	4·5	Milk Sugar	6·2
Bacteria	very numerous	Bacteria	absent

Thus cow's milk contains an excess of casein which curdles in the infant's stomach, and a deficiency in soluble albumen and sugar. Condensed milk, on the other hand, contains an excess of sugar, but a decided deficiency in fat and soluble albumen, and a slight deficiency in casein. We have therefore endeavoured successfully to produce two complete Foods which are, physiologically, practically the same as the mother's milk. These are

"First Food" for Infants,

which is prepared in the form of a powder, is made from fresh cow's milk, from which, after the proximate composition has been ascertained, the excess of casein is removed, and the deficiency in fat, soluble albumen, and milk sugar corrected. The method of preparation renders this food sterile, and boiled water alone is required in preparing it for use.

Infants reared by hand should be brought up on this food until they are three months old.

If the child be strong and able to assimilate the food, it is advisable to now begin using

"Second Food" for Infants.

(MOTHER'S MILK FOOD.)

This food, to meet the increasing requirements of the digestive apparatus, contains, besides the constituents of "First Food," maltose, with a small proportion of dextrine, together with soluble phosphates derived from whole meal. There is, however, no unconverted starch left in the food which at this age the infant would be unable to digest.

Experience has shown conclusively that after five or six months the infant can be most advantageously reared on

Allen & Hanburys' "Malted Food."

This has been manufactured by us for many years after the formula of Liebig, but by improved methods. The basis of the food is fine wheaten flour rich in nitrogen, with this advantage, that a large proportion, but not all the starch, is converted by the action of Malt Extract. The proportions are so arranged that the infant economy is not paralysed, as with some foods, by having everything digested for it, while on the other hand it is not given too much starch to digest. This food can be most successfully given when the mother's milk is beginning to fail both in quantity and richness, without the child being actually weaned. In this way a gradual transition can be effected from the natural to the full use of the artificial food.

It has been found already that this series of desiccated foods have proved invaluable on board ship, especially in the case when children have to be taken at an early age to India. It is found that owing to their careful preparation the foods keep well in hot climates, and the infant is shielded from the risk of bacterial infections by polluted milk. All risk is removed if only the water used be sterilised by well boiling.

PAMPHLET WITH TESTIMONIALS ON APPLICATION.

Allen & Hanburys Ltd., LONDON.

Offices, Laboratories & Warehouse—Bethnal Green, E. *City House*—Plough Court, Lombard St., E.C.
West End House—Vere St., W. *Cod Liver Oil Factories*—Lonova and Kjerstad, Norway.
Depot for Australia—484, Collins St., Melbourne.

See also pages iv, v vi, vii, viii.

"ONE OF THE MOST POPULAR TONICS OF THE DAY."
("British Medical Journal.")

Byno-Hypophosphites

A great advance on the ordinary (Sugar) Syrups of the Hypophosphites.

COMPOSITION.

The Vehicle is Bynin, our Liquid Extract of Malt, so prepared that the entire activity of the digestive diastatic ferment is preserved.

The active ingredients consist of a neutral solution of the Hypophosphites of Iron, Manganese, Calcium and Potassium, together with the Alkaloids of Nux Vomica and Cinchona.

These latter are present in the form in which they occur in the natural state, combined with vegetable acids. Unlike many galenical preparations, however, the quantity of each alkaloid present is a fixed one—that of Strychnine being $\frac{1}{60}$ grain to each ounce of the mixture.

THERAPEUTIC ADVANTAGES OF BYNO-HYPOPHOSPHITES are briefly:

(1) The employment of sugar, usual in most preparations of Hypophosphites, is avoided, and a potent cause of dyspepsia eliminated by the substitution of Malt Extract. This is capable of digesting and aiding the digestion of a considerable amount of starchy food.

(2) The Alkaloids of Nux Vomica, especially Strychnine, are perhaps the most valuable gastric tonics in common use, while those of Cinchona possess properties essential in the treatment of functional nervous disorders and febrile conditions. Given in combination with their natural acids, experience has long shewn that they are not only more easily tolerated, but more readily assimilated.

(3) The presence of Iron and Calcium in this preparation indicates its value as a direct hæmopoietic agent.

The Hypophosphites, taken as a group, are invaluable restoratives in cases of brain fatigue and nervous exhaustion. It is a matter of clinical observation that Phosphorus, essential in the production of the lecithin compounds of the nervous system, is far more readily assimilated in the form of Hypophosphites than as Phosphates, Phosphoric Acid, or even free Phosphorus.

"In Phthisis Hypophosphites are indicated for the following reasons:—
"They increase appetite and digestion, promote the formation of the blood, lessen cough "and expectoration; they appear to be more useful in the earlier stages of the disease, and "are said to be more successful with young than with old people. They are recommended "in nervous and general debility, teething, spermatorrhœa, chlorosis, and anæmia."—(RINGER).

BYNO-HYPOPHOSPHITES is a clear amber-coloured liquid of a slightly bitter but agreeable taste. It unites readily with water, and may be administered with safety to children.

Byno-Hypophosphites is put up in capsuled bottles at 2/6 and 4/6, and sold by Chemists everywhere.

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West End House—VERE ST., W. *Cod Liver Oil Factories*—LONGVA AND KJERSTAD, NORWAY.
Depot for AUSTRALIA—484, COLLINS ST., MELBOURNE.
See also pages iii, v, vi, vii, viii.

"The maintenance of Nutrition is the KEYNOTE of the successful treatment of Phthisis."—*The Lancet.*

Bynol. "The Perfected" Malt & Oil.

PHYSIOLOGY.

This can be best considered by taking separately its two constituents:—

1. The Malt Extract used contains an amylolytic ferment called diastase, of the fullest activity. Its special function of converting starchy foods into a soluble sugar which can be easily absorbed renders this preparation at once invaluable for aiding assimilation. In weakly and cachectic conditions the activity of the natural allied ferment ptyaline becomes greatly deficient, with the consequence that much ingested material is never digested. The Malt Extract being semi-fluid, and possessing a characteristic sweet taste, is therefore physically a very convenient vehicle for emulsifying and disguising the slight taste of the other constituent—Cod Liver Oil.

2. The physiological properties and fate of the latter body are complex; its equivalent in heat-units as regards the animal body is at least two-and-a-half times that of Meat Extract (Liebig); that is to say, it is at least two-and-a-half times as valuable as Meat Extract in maintaining the body weight. Long use has shown that, in atrophic conditions of the absorbing mechanism of the bowel, Cod Liver Oil is not only more easily emulsified, but more easily taken up by the villi of the small intestines and passed on to the lacteals.

In the "Perfected" Cod Liver Oil, where the formation of certain oxidation products irritating to the stomach is avoided, we have perhaps the ideal form of fat-food. Milk, cream, &c., are liable to produce butyric and other allied fatty acids, of little use except to irritate the gastric and intestinal mucous membrane.

To more perfectly understand the part played by Cod Liver Oil, the digestion of fat-foods is roughly as follows:—In the stomach slightly, but chiefly in the duodenum, by the action of the pancreatic ferment, fats are—

1. Emulsified, that is, broken up into minute oil globules, each surrounded by what is known as a haptogen membrane. In this physical state absorption is possible by the villi, the oils being unaltered.

2. Saponified, that is, split into fatty acids and glycerine, both capable of absorption by the intestine.

THERAPEUTICS.

The above considerations enable us to understand more clearly the immense use Malt Extract and Cod Liver Oil, especially in combination, have in wasting diseases.

In Phthisis, for example, the digestive ferments are of lowered activity, and the introduction of a modicum of artificial ferment not only increases the actual amount of food assimilated, but the power of the enfeebled ferments to assimilate.

The almost constant rise of temperature above the normal is maintained chiefly at the expense of the fatty constituents of the body; hence the wasting. This, experience has shown, can best (putting aside questions of hygiene) be combatted by increasing considerably the amount of fat-food and carbohydrate food.

When absorbed, the part played by fat-food is practically two-fold:—

1. It becomes the source from which the surplus fat stored up in various parts of the body may be replenished.

2. Fat-food is one of the chief sources of animal heat, as shown above.

As we have seen, the Cod Liver Oil is the best of the class of fat-foods, especially in an enfeebled condition, and, combined with Malt Extract, as in Bynol, further assists the assimilation of the extra carbohydrate ingested.

That what is physiologically is also clinically true cannot be better illustrated than in the remarks made by the late Sir ANDREW CLARK in a lecture at the London Hospital:—

"I have said that these fibroid cases are poor creatures, thin and white, and have what may be called nutritive debility, and the question is, What am I to do with them? You cannot do better than endeavour to make the patient walk in the way of physiological righteousness. But that sometimes will not do. Some people may be physiologically well behaved, and somehow they do not thrive on it. Can you do anything in those cases? There are two remedies which sometimes do succeed where the ordinary diet will not succeed in nourishing the patient—the one is Cod Liver Oil and Malt given with food—a preparation called Bynol—and the other is the remedy called Bynin Emulsion, consisting of Hypophosphites, Oil, and Malt; both are prepared by Messrs. ALLEN & HANBURYS. These are two good nutritive agents in promoting nutrition."

"A perfect combination of Malt Extract and Cod Liver Oil."—*The British Medical Journal.*

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Depot for AUSTRALIA—484, COLLINS ST., MELBOURNE.

See also pages iii, iv, vi, vii, viii.

Medicated Throat Pastilles,

Manufactured by ALLEN & HANBURYS Ltd.

THE increased knowledge of the local treatment of the various morbid conditions of the Throat necessitates nowadays the employment of a greater variety of drugs, and in a more palatable and demulcent form than the lozenges in common use. These Pastilles have been in use many years, and the following list is a result of the experience of many practitioners.

For the convenience of the Medical Profession the Pastilles may be conveniently grouped under the following headings:—

For Ordinary Relaxed Throat.

No. 11—Chlorate of Potash, 1 grain in each.
,, 32—Red Gum and Chlorate of Potash (Gum: Rubr: gr: ii, Pot: Chlor: gr: i.).
,, 14—Tannin, 1 grain.
,, 29—Rhatany and Cocaine (Ext: Kramer: gr: ii. Cocain: gr: 1-10th).

For Overstrain of Throat involving Relaxation.

No. 38—Chlorate of Potash, Borax and Cocaine (Pot: Chlor: et Boracis āā. gr: i. Cocain: gr: 1-20th).
,, 47—Alum and Tannin (āā. gr: i.).

These are also useful in relieving granular pharyngitis (Clergymen's Sore Throat). For the removal of the Tenacious Mucus, Ammon: Chloride Pastilles are indicated.

For Irritable Relaxed Throat with Elongated Uvula.

No. 29—Rhatany and Cocaine (Ext: Kramer: gr: ii, Cocain: gr: 1-10th).
,, 31—Red Gum and Cocaine (Gum: Rubr: gr: ii, Cocain: gr: 1-20th
,, 24—Cocaine, 1-10th and 1-20th grain.
,, 16—Bromide of Ammonium.

For Sore Throat of Influenza and Fever.

No. 6—Aconite. Each Pastille equals ½ minim of B P. Tincture.
,, 2—Ipecacuanha, ¼ grain.

Both are useful for the Feverish Colds of Children.

For Sore Throats & Tracheitis, Influenza Cold.

No. 43—Menthol, 1-10th and 1-20th grain.
,, 19—Chloride of Ammonium, 2 grains. Stimulant Expectorant.
,, 4—Compound Morphia and Ipecacuanha (Morphinæ. gr: 1-40th: Ipecacuanhæ, gr: 1-5th; Scillæ, gr: 1-5th).
,, 45—Menthol and Rhatany (Menthol, gr: 1-20th; Ext: Kramer: gr: ii.).

For Acute Tonsillitis and Diphtheritic Throat.

No. 44—Menthol and Cocaine (āā. gr: 1-20th).
,, 46—Menthol and Bromide of Ammon. (Menthol, gr: 1-20th; Ammon. Bromidi, gr: i.).
,, 15—Carbolic Acid, ½ grain.
,, 41—Eucalyptus Oil.
,, 30—Boracic Acid, 1 grain.
,, 5—Opium and Belladonna. Equals the Lozenges of the B.P.

Compound Guaiacum, Guaiacum, Potash Chlorate, and Red Gum may be used with advantage in stages of recovery or Chronic Enlarged Tonsils.

For Acute Pharyngitis, Acute Inflammation of Pharynx.

AS ADJUVANT USE.

No. 5—Opium and Belladonna. Equals the Lozenges of the B.P.
,, 6—Aconite. Equals ½ minim of Tincture, B.P.
,, 24—Cocaine, 1-10th and 1-20th grain.

During recovery, use ASTRINGENT PASTILLES.

For Irritable Throat of Phthisis, Laryngeal Phthisis.

No. 1—Morphia, 1-40th grain.
,, 26—Codeine, ½th grain.
,, 34—Terebene, 2 minims.
,, 36—Pumilio Pine, 1 minim.

For Ulcerated Conditions of Mouth, Tongue, Gum Boils.

No. 17—Chlorate of Potash and Borax, āā. gr: i.
,, 30—Boric Acid, 1 grain.
,, 15—Carbolic Acid, ½ grain.

☛ *In ordering these Pastilles numbers may be quoted for convenience.*

These Pastilles are supplied in 1-lb. bottles, and in boxes containing 3 oz.

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See also pages iii, iv, v, vii, viii.

THE

Thyroid Treatment

and the PREPARATIONS manufactured by

ALLEN & HANBURYS Ltd.

MYXŒDEMA.—The relief afforded to cases of Myxœdema by the use of the Thyroid Gland during the last five years has marked a totally new departure in the history of medicine. We are beginning to understand the physiological importance of Internal Secretions to the animal economy.

The Thyroid Gland is a secreting gland, with a large vascular supply, but with no efferent duct to carry away the secretion formed. This is reabsorbed again, but what becomes of it is unknown.

Myxœdema has been recognised as long ago as 1874 by Sir WM. GULL as a distinct disease, and before that time it had been found that animals invariably succumbed after total extirpation of the Thyroid.

A condition known in Germany as Cachexia Strumapriva (and afterwards shown to be identical with Myxœdema) was described as occurring after total or nearly total extirpation of the enlarged gland in goitre.

Cretinism, too, had long been recognised to be connected with congenital absence or deficiency in the glandular structure of the Thyroid.

Deductive reasoning led to the grafting of the Thyroid in animals dying after total extirpation of the gland. Where the graft was successful, the animals lived. This method was employed in a case of Myxœdema with some show of success, in spite of the difficulty of the operation, in 1890 (*British Medical Journal*, 1890, p. 525), after the publication of VICTOR HORSLEY'S papers in the same year.

Abroad the same method was employed on a cretin with marked success. MURRAY, in 1892, conceived the plan of injecting a glycerine extract subcutaneously, and it may be said that the publication of his paper at the Meeting of the British Medical Association in that year was the practical starting point of the Thyroid Treatment of Myxœdema and Cretinism.

The method of injection was soon abandoned when it was discovered that the beneficial effect of the gland was unimpaired when digested in the stomach; and it was a short step from the administration of raw Thyroid to that of pharmacological preparations of the active principles of the Thyroid Gland.

Time enough has now elapsed to prove that these cases of Myxœdema which have been restored to health maintain that condition as long as they continue to take the gland or efficient preparation of its extract.

SPORADIC CRETINISM.—As regards Sporadic Cretinism, we cannot do better than refer the reader to an original article which appeared in *The Lancet*, **with Photographs**, by W. W. O——, M.D., Oxon., M.R.C.P. London, November 4th, 1893, p. 1113.

All these cases were treated by Allen & Hanburys' Thyroid Tabellæ. The results are perhaps more remarkable than those obtained in the allied condition of Myxœdema. **The writer observes that these preparations have given entire satisfaction. The Photographs speak for themselves.**

The success attending the use of Thyroid Extract in the myxœdematous condition of the skin and its appendages has suggested its employment in various skin lesions.

PSORIASIS.—Very good results have been attained in some cases of obstinate psoriasis by using Thyroidin Tabellæ.

In a recent number of *The Lancet* three of these cases are reported. After treatment with iodide of potassium and arsenic internally, and chrysophanic acid ointment locally, showed no improvement, but, on the other hand, the disorder was in some cases aggravated, developing a general dermatitis of the face with febrile disturbance.

But on the Treatment being changed, and TABELLÆ OF THYROID GLAND (ALLEN AND HANBURYS') being administered, the writer observes:—

Case 1.—"The improvement was very striking . . . the scales were completely gone, and all that was left was a slight discolouration of the skin where the disease had appeared."

Case 2.—"The scalp and limbs were nearly clear. . . The patient, who has suffered from the disease for nineteen years past, has had no discomfort from the remedy, and says that nothing has ever acted so rapidly upon his disease."

Case 3.—"The result was astonishing, for in three days there was a marked improvement, and no further spread of the disease had taken place. No discomfort was experienced from the remedy."

For full details of the above quotations see *The Lancet*, January 6th, 1894, p. 19.

THE THYROID TREATMENT—*continued.*

Whilst formerly liquid extracts and the raw gland were used, ALLEN & HANBURYS were the first to offer the active principles of the Thyroid Gland in the *compressed form*, which is now the favourite mode of administration, and their preparations of Thyroidin were introduced to the medical profession in the advertising columns of *The Lancet*, on February 25th, 1893. Careful study and subsequent experience in the mode of preparation have enabled them to produce Thyroidin, *i.e.*, **the active principles isolated from carefully selected glands.** The glands are dissected and carefully examined and separated from all *blood, fat, and inert tissue, which readily decompose* and produce gastric disturbances, vomiting, &c., **and which give to some preparations on the market a most repulsive smell, especially when they have been kept for a short time.**

Thyroidin Tabellæ

Readily disintegrate when swallowed, and from their shape and size are taken without difficulty. If preferred, they may be dissolved in a little water before being swallowed.

One Tabellæ equals 5 grs. of Gland. *Dose:* 1 or 2.

Thyroidin Catchets

Contain 5 grs. of Thyroidin in each. *Dose:* 1 or 2. A very suitable and convenient mode of taking Thyroidin.

Elixir Thyroidin

Is a very palatable, slightly sweet preparation, of which one fluid ounce represents one Gland (average). It will be found to keep well without change. *Dose:* 1 to 4 fluid drachms.

The above are put up in 1/-, 2/6, and 4/6 packages (retail), or 8/-, 21/-, and 40/- per dozen to the Profession.

SAMPLES SUPPLIED TO THE PROFESSION ON APPLICATION.

VAPO-CRESOLENE

Established 14 Years.

Vapo-Cresolene.

A REMEDY FOR WHOOPING COUGH.

The practice of taking children suffering from Whooping Cough to the purifying rooms of gas works led to an effort to find the causes which effected relief. Cresolene is the resulting product; a chemically pure distillate from coal tar of a greater antiseptic power than carbolic acid. Vaporised in a closed room Cresolene will cure the most severe cases of Whooping Cough. The beneficial effect is often almost immediately noticeable. The odour of Cresolene is not unpleasant, and it may be inhaled for any length of time without harm to the youngest child. Cresolene is used with success as a remedy or preventive in Diphtheria, Scarlet Fever, Asthma, Croup, Catarrh, Bronchitis, &c. The Vaporiser is simple, compact, and inexpensive. Vapourisation is effected by means of a kerosine lamp. Cresolene, owing to its great antiseptic power and the way in which it is used, is a valuable assistant as a preventive or remedy.

VAPORISER and LAMP, with a 2-oz. bottle of Cresolene, neatly boxed, 6/-; Additional Cresolene, 2-oz. bottle, 1/1½; 4-oz. bottle, 2/-; *obtainable of any Chemist or from*

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Cod Liver Oil Factories: LONGVA AND KJERSTAD, NORWAY.
Australian Agency: 484, COLLINS STREET, MELBOURNE.

See also pages iii, iv, v, vi, vii.

A. W. REID & Co.,

Manufacturing Sanitary Engineers,

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Portable Water Closets

FOR CLEANLINESS, COMFORT AND CONVENIENCE.

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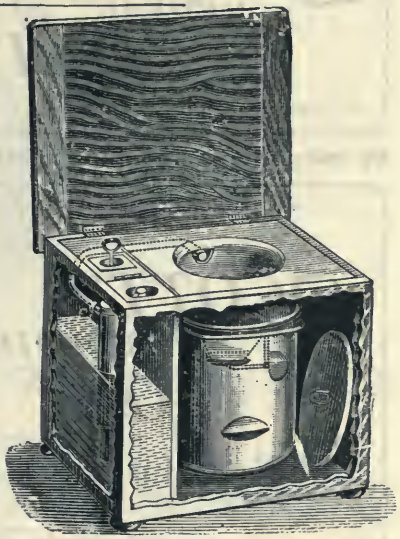

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Reid's full size Improved Portable Water Closet, white basin, French polished mahogany case, with door in front	6	0	0
Do. in polished pine case, with mahogany seat, door in front ..	5	0	0
Mahogany Arms to either of the above, *extra*	0	12	0
Blue Printed Basins, *extra*	0	2	0

"ALDGATE" FLUSH DOWN PEDESTAL CLOSET.

Specially designed to work with a Syphon Cistern, compact in appearance, economical in price.

PRICES.	£	s.	d.
Plain white "Aldgate" Flush Down Pedestal Closet, polished mahogany or walnut seat, syphon cistern, brass chain, porcelain pull, and paper box, complete with brackets for cistern and seat	4	0	0
Do. printed basin .. *extra*	0	5	0
Do. printed inside and out, *extra*	0	10	0
Do. with raised ornamentation, as illustration, in plain white .. *extra*	0	7	6
Do. with self-rising seat, *extra*	0	10	0

Gold Medal awarded at the International Health Exhibition, London, 1884.

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(*In Sealed Bags.*)

"ROYAL" STAG BRAND

OAT MEAL.

OF ABSOLUTE PURITY. SPECIALLY PREPARED FOR FAMILY USE.

By Special Appointment to H.R.H. the Prince of Wales.

"Your preparation is certainly the best I have ever examined."
H. C. BARTLETT, PH.D., F.C.S.

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OAT FLOUR.

UNEQUALLED as the most wholesome and nutritious food for Infants, Invalids, and persons of weak digestion.

Entirely free from husk, and specially rich in flesh and bone forming properties.

Nine First Class Exhibition Awards.

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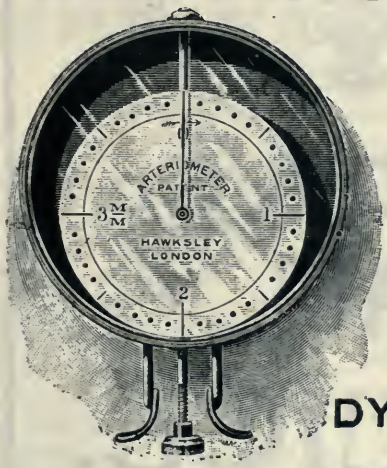
HAWKSLEY'S PATENT
ARTERIOMETER



The diameter of the *radial* artery is *measured* by the Arteriometer in $\frac{1}{10}$ mm., and the pressure required to close it by the Sphygmo-Dynamometer in grammes up to 400.

For the clinical use of these Instruments see "Pulse Gauging and Pulse Pressure," by Dr. GEO. OLIVER.

AND

SPHYGMO-DYNAMOMETER.

HAWKSLEY'S PATENT
MILK *STERILIZERS*

For Infants and Invalids. In Three Designs.

A MODIFICATION OF DR. BUDIN'S METHOD of Feeding Infants, suggested in the *British Medical Journal*, December 7th, p. 1401, by which each dose of food is separately sterilized and used as required; one operation being sufficient for one day's consumption.

May be used on the nursery fire, or a gas, spirit, or oil stove.

Also Nos. 1 and 2. A simple form.

Made in several sizes. Price from **10s. 6d.** to **£1 5s.**

"Suitable alike for Invalids and Family Use."

As used in the Children's Hospital, Manchester, for "Humanizing" and "Peptonizing" Infants' Food.

———, F.R.C.S., writes:—"I have been in want of such an apparatus for some time, *for the amount of mortality and illness from the lack of* STERILE MILK, *when breast feeding is neglected* or unavoidably abandoned, IS APPALLING."

Price Lists and descriptive Pamphlets post free from the

SOLE MAKER & PATENTEE—

HAWKSLEY, ***Surgical Instrument Maker,***

357, Oxford St., LONDON.

PURVEYORS TO H.R.H. THE PRINCE OF WALES.

ICH DIEN.

BRAND & Co.'S MEAT JUICE.

Prepared from the finest ENGLISH MEAT.

"This is a powerful, nourishing, and stimulating fluid, obtained from prime beef by submitting it to pressure in the cold—a method of preparation which must be regarded as highly satisfactory, for, according to our analysis, the valuable principles of the meat have not only been preserved intact, but the fresh, agreeable, and natural flavour of beef has also been retained."—*Lancet*, January 7th, 1893.

Supplied to Her Imperial Majesty the EMPRESS of RUSSIA.

CAUTION. ***Beware of Imitations. Each genuine article bears our Signature and Address:—***

Brand & Company

11, LITTLE STANHOPE ST., MAYFAIR, LONDON, W.

Price Lists of Invalid Preparations free on application.

THE PURE NATURAL
MALVERN
SPRING WATER

(THE "ALPHA" BRAND.)

A LUXURY IN INVALID NURSING.

A Refreshing Draught of Purest Spring Water always at hand.

It is an excellent sanitary practice to drink this reliable Spring Water at all meals, and to keep a bottle in every bedroom for a morning and evening draught. Secured by its glass stopper from every taint, it is safe and delightfully refreshing. It prevents the necessity of resorting to the bedroom water-bottle (so fraught with danger).

The Malvern Water was always highly valued by the late Sir ANDREW CLARK, who drank it for many years, and recommended it to innumerable patients.

The exceptional purity of this Water renders it valuable under many circumstances, and especially where the use of Calcareous Waters is contra-indicated.

It is most useful for diluting medicines, being always at hand and protected from deterioration.

It should also be known that the Malvern Water makes the best possible ***Tea,*** extracting the flavour in quite a remarkable manner. In fact, for infusions generally, and every form of Invalid Cookery, it is invaluable.

The Malvern Water is bottled ***at the famous Springs,*** by W. & J. BURROW, in Wine-quart Stoppered Bottles. The Water is ***Four Shillings*** per Dozen, and ***Six Dozen*** are sent by rail, carriage paid.

CAUTION.—To insure having the GENUINE Water see the "ALPHA" Trade Mark on the Labels over the Stopper of every Bottle.

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"ALPHA" BRAND

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These minute bi-convex jujube envelopes have been so devised that two easily reducible salts can be ingested at once, but do not interact till reaching the stomach; they then combine with great energy, forming such salts as *Ferrous Carbonate, Arseniate*, &c., in the nascent state, *i.e.* their most active therapeutic condition.

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Aconite Tincture, m. 1, 2, 5.
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Morphine, gr. ⅛, ¼ and ½.
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Is not a Peptone-Pepsin, but a pure Enzyme of high peptic power prepared by the Webber Process. It will digest 30,000 times its own weight of Albumin. *Free* from *mucus* and *ptomaines, keeps well, soluble* in *water* (*many so-called Pepsins are not*). *In granular or powdered form in* 1-*oz. bottles only*, **3/6.**

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Glycerole of Pepsin, a concentrated solution 1 gr. in m. 10.		

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The widely employed and valued Enzymes of the pancreatic juice in the purest and most energetic form therapeutically yet obtained. Prepared by the Webber Process. Our product contains all the complex active principles obtainable from this gland, with a high amylolytic power.

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Morphin Bimec., gr. 1/8, 1/6, 1/4.
Morphin Mur., gr. 1/4.
Morphin Sulph., gr. 1/12, 1/8, 1/4 and 1/2.
Morphin, gr. ½; Atropin, gr. $\frac{1}{100}$.
Nitroglycerin, gr. 1/200 1/100.
Nitroglycerin, gr. 1/100; Strychnin, gr. 1/50.
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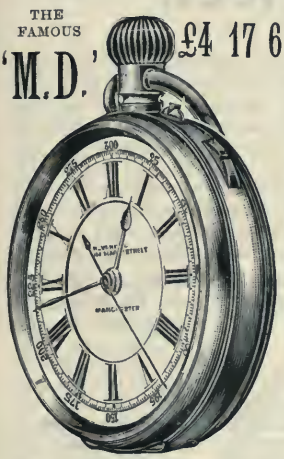

are invariably—and rightly—respected, since they represent the conclusions at which trained and cultured intellects have arrived. People generally recognise that Medical Experts, long accustomed to habits of observation, form their judgments upon *substantial* grounds, after carefully investigating every feature, both great and small, which the subject under consideration may present. They are totally unsusceptible to side-lights which frequently influence the lay mind, being guided in their conclusions almost entirely by facts actually in evidence. Such opinions are truly **most valuable** and are **rarely** advanced except in connection with matters medical, and when they are extended to subjects outside their profession they are entitled to the most respectful and earnest attention. Below will be found a few specimens of the unsolicited opinions of some well-known professional authorities.

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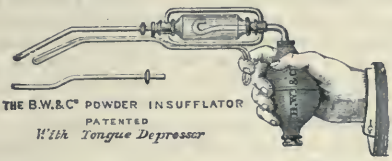

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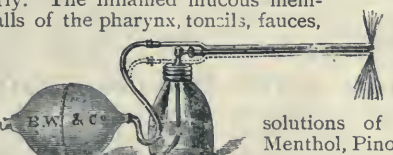
This simple and durable Atomiser provides the laryngologist with a ready means of applying medicaments to the larynx and pharynx.

By an ingenious arrangement the spray can be directed either laterally or perpendicularly. The inflamed mucous membranes of the walls of the pharynx, tonsils, fauces, larynx, and trachea, may thus be treated with medicated solutions with ease and effectiveness never before obtained; aqueous solutions of the usual curative agents may be employed or, better still, solutions of Carbolic Acid, Menthol, Pinol, Iodoform, &c., in "Paroleine" may be used.



"Paroleine" is a bland, soothing, oily substance without taste, odour, or colour, and is a ready and stable solvent of those therapeutic agents formerly applied in ointments. *Price* **5/2.**

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This strongly made Atomiser is especially adapted for the application of the spray of oily solutions of mucous-membrane stimulants. Watery solutions are made by compressing the bulb in the ordinary way, but if it is desired to vaporise the ingredients of an ointment, the latter must be placed in the bottle with a spatula, and afterwards melted by placing the bottle in warm water. By far the best oily medium is "Paroleine," a tasteless and colourless body which readily dissolves the antiseptic agents in general use. In addition it possesses unique soothing and healing qualities of its own. *Price* **3/5.**

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Supplied to the Medical Profession at **3/6** *per bottle.*

Peptogenic Milk Powder (Fairchild).

This is a powder which, added to diluted cow's milk, to which cream has been added, will bring it to the same strength and composition as human milk. It is especially adapted for the use of infants deprived of their natural food. The Peptogenic Milk Powder is peculiarly designed for the preparation of the exclusive food of an infant during the entire nursing period. The humanized milk prepared in this way, is as digestible as mother's milk, but not more so, and the digestive system of the infant is not weakened by having no work to do. It has been pronounced by high medical authorities to be "The best physiological imitation of mother's milk."

Supplied to the Medical Profession at **1/10** *and* **3/6** *per bottle.*

Pepsencia (Fairchild).

A solution of the essential organic ingredients of the Gastric juice, extracted directly from the peptic glands of the stomach. This digestive Essence possesses remarkable activity, and is vastly superior to the usual wines, elixirs, etc., of Pepsin, which are made from saccharated Pepsin, and which often contain but the merest trace of the true digestive ferment. It is a powerful digestive of milk, albumen, fibrin, and gelatine. It exhibits, in a remarkable degree, the coagulating power upon milk, which has been shown by physiologists to be characteristic of the gastric juice.

Supplied to the Medical Profession at **3/4** *per bottle.*

Burroughs, Wellcome & Co.,
Snow Hill Buildings, LONDON, E.C.
Cable and Telegraphic Address—"BURCOME, LONDON."

Some Important Digestive Agents.

"Zymine" (Fairchild).

This contains the pure digestive ferments of the pancreas, and will pre-digest the various foodstuffs. By its aid the most complete invalid and dyspeptic dietary can be made—beef tea, gruels, blanc-manges, custards, etc., being prepared with it easily and without extra trouble. All that is required in using it is to add a little of the "Zymine" to the food in the process of preparing, when the latter will be pre-digested. Peptonised foods are retained and relished by the most delicate patients.

Supplied to the Medical Profession in bottles at **1/8** *and* **5/-** *each.*

"Zymine" Peptonising Tubes.

The rational food for infants is naturally mother's milk, but when this is not available recourse must be had either to cow's milk prepared by means of "Zymine," or to humanized milk prepared by means of the Peptogenic Milk Powder (Fairchild). The latter is adapted for the child's use throughout the entire nursing period, the former for special circumstances, and for the preparation of pre-digested milk for adults. By means of "Zymine" Peptonising Tubes cow's milk may be rendered very similar to mother's milk, forming fine flakes instead of curds when acted upon by the digestive juices, and agreeing when everything else is rejected. Milk so treated is sweet and palatable, and suitable for all the purposes for which plain milk is generally used. The process of peptonisation is extremely simple, and can be carried out by the most inexperienced of nursemaids. The BRITISH MEDICAL JOURNAL reported:—"The introduction of 'Zymine' Peptonising Powders has probably done more than any other therapeutic measure of recent times to lessen infant mortality."

Supplied to the Medical Profession in boxes containing 1 *doz. tubes, at* **1/2** *per box.*

"Zyminised" Nutritive Suppositories.

The increase of knowledge and skill in medicine and therapeutics is in nothing more conspicuously exemplified than in the now perfected method of feeding *per rectum*. The Zyminised Suppositories contain only peptonised concentrated meat or milk and digested oil, and it has been amply demonstrated that they may be successfully employed to sustain life in infants and adults, whenever, for any reason, feeding by the stomach is impossible or undesirable. In fevers, consumption, gastric, œsophageal, and intestinal diseases, and in all wasting affections of children and infants, they are capable of sustaining life for months.

Each Zyminised Meat Suppository contains the digested equivalent of ½-oz. of fresh beef, each Zyminised Milk Suppository the digested equivalent of 5 drachms of fresh milk.

Supplied to the Medical Profession in boxes containing 1 *doz. at* **1/10** *per box.*

Burroughs, Wellcome & Co.,

Snow Hill Buildings, LONDON, E.C.

Cable and Telegraphic Address—"BURCOME, LONDON."

"Soloids" of Compressed Antiseptics.

TRADE MARK.

"Soloids" are composed of powerful antiseptic agents compressed into masses of distinctive shape and colour. They contain sufficient of the antiseptic of which they are composed to form a solution of definite strength when dissolved in a stated quantity of water.

"Soloids" of Mercuric Chloride.—"Soloids" of Mercuric Chloride enable the surgeon to produce almost instantly a solution of any strength he may desire, one "Soloid" dissolved in a pint of water yielding a solution of one in one thousand. The Mercurial Salt is associated with a sufficient quantity of an alkaline chloride to prevent decomposition in case of hard waters and precipitation by albumen in gynæcological irrigations. To secure the thoroughly antiseptic conditions of sponges, instruments and containers, and general material likely to affect or to come into contact with the wound, a sufficiently strong solution may be made with one "Soloid" in a quart of water. "Soloids" of Mercuric Chloride are supplied to the Profession in bottles of 25 and 100 at **9d.** and **2/-** each.

"Soloids" of Iodic-Hydrarg.—Each "Soloid" contains 8·75 grains of the double salt, Mercuric-potassio-mercuric Iodide, so that one dissolved in a pint of water gives a solution of one in one thousand for use in the treatment of newly exposed surfaces, in surgical operations, and to ensure the perfect asepsis of the hands and instruments without injuring the former or rotting the latter. Owing to its combining the properties of nascent Iodine with Mercury in a readily soluble form, Iodic-Hydrarg. meets every requirement in an antiseptic. Iodic-Hydrarg. "Soloids" are supplied to the Profession in bottles of 24 and 100 at **1/8** and **5/8** each.

L.G.B. "Soloids."—One L.G.B. "Soloid" on being dissolved in a pint of water makes a solution of the strength and character recommended in the Local Government Board Memorandum of 1892. These L.G.B. "Soloids" are rapidly soluble in ordinary well water, and their peculiar but perfectly harmless coloration and terebinthine odour are safeguards against mistake or poisoning by accident. They are extremely useful for disinfecting clothing, furniture, rooms, dejecta, &c., in cases of epidemics. L.G.B. "Soloids" are supplied to the Profession in bottles of 100 at **2/-** each.

"Soloids" of Potassium Permanganate.—Each "Soloid" contains 5 grains of Potassium Permanganate, so that one dissolved in one fluid ounce of water makes a solution of practically the same strength as the official Liquor Potassii Permanganatis. These "Soloids" are particularly useful for instant preparation of solutions for caustic and deodorising purposes in cases of cancer and foul ulceration, to deodorise fœtid or decomposing animal excreta, or as an antidote in case of Phosphorus poisoning. Supplied to the Profession in bottles of 25 and 100 at **6d.** and **1/2** each.

Burroughs, Wellcome & Co.,

Snow Hill Buildings, LONDON, E.C.

Cable and Telegraphic Address—"BURCOME, LONDON."

Organic Principles of Animal Origin in "Tabloids."

The extraordinary cures effected by means of medicinal substances of animal origin have created an enormous demand amongst the Profession for preparations of this class, and induced many experimentalists to explore this interesting field for therapeutic research. It is necessary, however, to sound a note of warning in connection with these, at present, little understood remedies. In the absence of any exact knowledge as to the chemical nature of the curative principles it is well to remember that the various aqueous, alcoholic and glycerine extracts of animal substances, may or may not contain the potent ingredient. To prepare a really reliable preparation it is necessary, therefore, that the product represent the substance of the whole gland. The keeping powers of liquid extracts are uncertain and they are found to be generally inoperative and often harmful. On the other hand, clinical reports have followed each other week by week in the medical journals, emphasizing the uniformity of activity and effect of "Tabloids" of this class, thus proving the regularity of their percentage of active principle or principles.

"Tabloids" of Thyroid Gland.—Have a powerful stimulant effect on the mucous and vascular systems, and through them on the skin. Used beneficially in Acromegaly, Myxœdema, Sporadic Cretinism, Psoriasis, Acute and Infantile Eczema, Condylomata and Syphilitic Rupia.

"Tabloids" of Thymus Gland.—Administered with favourable results in Paltauf's "Status Thymicus," in Graves' Disease with Anæmia and Debility, Leucocythemia, Lymphadenoma and Chlorosis.

"Tabloids" of Didymin (Orchitic Substance).—Used in Nymphomania, Epilepsy, Hysteria, Neurasthenia and Perverted Sexual Habits.

"Tabloids" of Pituitary Body.—Administered to increase brain nutrition and to regulate the functions of that organ.

"Tabloids" of Cerebrinin.—Used as nutrients and sedatives to the tissues of the brain and exert undoubted curative power in Chorea, Grave Hysteria, Melancholia and other symptoms liable to follow Ovariotomy.

"Tabloids" of Ovarian Substance.—Extensively prescribed in pathological conditions in which ovarian functions are either partially or totally arrested.

"Tabloids" of Pineal Gland.—Act as a stimulant to the great cerebral centres with especial application to the grey matter of the ganglia.

"Tabloids" of Bone Medulla.—Have been prescribed successfully in cases of Pernicious Anæmia and other disorders depending upon analogous conditions of the blood.

"Tabloids" of Suprarenal Capsules.—Are claimed to be very energetic in their action on the renal and vascular systems.

"Tabloids" of Splenic Substance.—Used as a general tonic, stimulant and hæmopoietic.

Specimens of any of above sent to Medical Men on request.

Burroughs, Wellcome & Co.,

Snow Hill Buildings, LONDON, E.C.

Cable and Telegraphic Address—"BURCOME, LONDON."

Ophthalmic Medication.

Ophthalmic "Tabloids."

These are introduced to supply the long-felt want of a method of treating complaints and affections of the eye, which is easy of application, certain in effect, and free from objections from the patient's point of view. The frequent instillation of a solution is very distressing, and is often even injurious, since it disturbs the absolute rest which is so important a consideration in the treatment; besides, only a small quantity is retained, and that quantity is so diluted by the lachrymal secretion as to become very partial in effect. Ophthalmic "Tabloids" obviate these defects, and constitute a perfectly sterile and reliable mode of administering remedies to the eye. They are minute discs of the thickness of note-paper, extremely delicate in appearance, very soluble, and prepared with a perfectly innocuous and non-irritating basis. Each "Tabloid" holds a definite quantity of alkaloid. With two exceptions they are intended to be inserted within the conjunctival sac as they are, and when placed *in situ*, the eye being kept closed for a few minutes after insertion, they are immediately dissolved in the secretion and diffused over the surface of the eye.

Ophthalmic Pocket Case.

This case measures $2\frac{3}{4} \times 1\frac{3}{4} \times 1\frac{1}{3}$ ins., and contains a medicine dropper, Tabloid-holder, two camel-hair brushes, a small glass mortar and pestle, and nine tubes of Ophthalmic "Tabloids." Nothing so complete, practical, compact, and portable has hitherto been placed at the disposal of the medical profession in this direction. To practitioners in rural districts and other places remote from the chemist, the Ophthalmic Case must necessarily become a *vade mecum*, since, while it is so small that it can be carried in the pocket almost without its presence being felt, it comprises a representative selection of those agents generally called for in ophthalmic practice, with apparatus for applying them.

Supplied to the Medical Profession, fitted complete, **7/6.**

LIST OF OPHTHALMIC "TABLOIDS."

A	Atropia Sulph.	1-200 gr.
B	Atropia Sulph.	1-200 gr.
	Cocaine	1-200 gr.
C	Cocaine	1-20 gr.
D	Atropia Sulph.	1-20 gr.
E	Homatrop. Hydroch.	1-40 gr.
F	Eserine Salicyl.	1-600 gr.
G	Eserine Salicyl.	1-500 gr.
	Tropacocaine Hydroch.	1-100 gr.
H	Homatrop. Hydroch.	1-400 gr.
*J	Hydrarg. Perchlor.	1-1000 gr.
K	Pilocarpine	1-400 gr.
L	Tropacocaine Hydroch.	1-80 gr.
M	Pilocarpine	1-500 gr.
	Cocaine	1-200 gr.
N	Homatrop. Hydroch.	1-600 gr.
O	Homatrop. Hydroch.	1-240 gr.
	Cocaine	1-24 gr.
*P	Boracic Acid (per formed with Otto of Rose)	6 gr.
Q	Duboisine Sulphate	1-250 gr.
R	Zinc Sulphate	1-250 gr.
S	Scopolamine Hydrobrom.	1-200 gr.

* For use in solution.

In ordering or prescribing it is necessary to quote the distinguishing letter only; e.g.—
℞ "Tabloids" Ophthalmici (B. W. & Co.) "A."

Supplied to the Medical Profession in tubes, each containing 25 "Tabloids," (except C, D, E, G, L, O, S., which contain 12 "Tabloids" only) at 6d. per tube.

Burroughs, Wellcome & Co.,
Snow Hill Buildings, LONDON, E.C.

Cable and Telegraphic Address—"BURCOME, LONDON."

Hypodermic Medication.

Hypodermic "Tabloids."

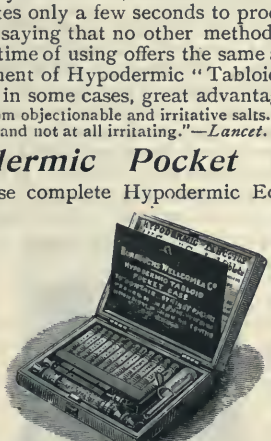
The fact cannot be too pointedly emphasized that solutions for hypodermic injection should in all cases be prepared at the moment, and it is to enable this to be done with a minimum of trouble and risk that Hypodermic "Tabloids" were introduced. They are tiny discs, each containing an absolutely exact quantity of alkaloid, combined with a perfectly soluble and innocuous base. It takes only a few seconds to produce a perfect solution, and we feel justified in saying that no other method for the ready preparation of solutions at the time of using offers the same advantages to the practitioner as the employment of Hypodermic "Tabloids." They may also be used sublingually with, in some cases, great advantage.

"They are quite free from objectionable and irritative salts."—*Brit. Med. Journ.*

"They are very soluble and not at all irritating."—*Lancet.*

Hypodermic Pocket Cases.

These Cases comprise complete Hypodermic Equipments, but at the same time occupy so little bulk that the presence of one of them in the pocket is scarcely felt. Each case contains a carefully selected syringe with two needles, and a selection of Hypodermic Agents in "Tabloid" form. The absolutely reliable character of Hypodermic "Tabloids," their accuracy of dosage, their physiological activity, and their freedom from irritative or acid salts, have been demonstrated time after time. The "Miniature" case, as illustrated, is designed to hold, in addition to the syringe and needles, fifteen tubes of assorted Hypodermic "Tabloids." It measures only $3 \times 2\frac{1}{4} \times \frac{3}{4}$ inches, is the smallest and most compact case yet produced, and costs **12/6**, fitted complete.



LIST OF HYPODERMIC "TABLOIDS."

b Aconitine Nitrate 1-260 gr.
a Apomorph. Hydroch. 1-10 gr., 1-15 gr.
a Atropine Sulphate 1-150 gr., 1-100 gr., 1-60 gr.
*b** Caffeine Sodio-salicyl. 1-2 gr.
a Cocaine Hydrochlorate 1-10 gr., 1-6 gr., *1-4 gr., *1-2 gr.
b Codeine Phosphate 1-4 gr.
b Colchicin 1-100 gr.
b Cornutin Hydrochlor. 1-60 gr.
b Curare 1-12 gr.
a Digitalin, Crystalline 1-100 gr.
b Ergotinin Citrate 1-100 gr., 1-200 gr.
a Eserine Salicylate 1-100 gr.
b Homatropin Hyd. 1-250 gr.
a Hydrarg. Perchlor. 1-60 gr., 1-80 gr.
b Hydrarg. Sozolodol 1-4 gr.
a Hyoscine Hydrobrom. 1-200 gr., *1-75 gr., *1-10 gr.
*a** Hyoscyamine Sulphate 1-80 gr.
*b** Hyoscyamine Sulphate 1-20 gr.
b Morphine Bimeconate 1-8 gr., 1-6 gr., 1-4 gr., 1-3 gr.
a Morphine Hydrochl. 1-6 gr., 1-4 gr.
*a** Morphine Sulphate 1-12 gr., 1-8 gr., 1-6 gr., 1-4 gr., 1-3 gr., 1-2 gr.
a Nitro-glycerine 1-250 gr.
Morphine Sulphate with Atropine Sulphate 1-12 & 1-250 gr., 1-8 & 1-200 gr., 1-6 & 1-180 gr., 1-4 & 1-150 gr., 1-3 & 1-120 gr., *1-2 & 1-100 gr.
‡ Pilocarpine Hydrochl. 1-10 gr., 1-6 gr.
‡* Pilocarpine Hydrochl. 1-8 gr.
*b** Quinine Hydrobrom. 1-2 gr.
*b** Sclerotinic Acid 1-2 gr., 1 gr.
b Sodium Phosph. Co.
*b** Sparteine Sulphate 1-2 gr.
b Strophanthin 1-500 gr.
b Strychnine Nitrate 1-15 gr., 1-10 gr.
a Strychnine Sulphate 1-160 gr., 1-100 gr., 1-60 gr.

Hypodermic "Tabloids" supplied in tubes of non-actinic glass, each containing 20 "Tabloids" (except those marked with asterisks, which contain only 12). Those marked *a* 6d. per tube; those marked *b*, 8d. per tube.

‡ Owing to the great scarcity of Pilocarpine the price of the Hypodermic "Tabloids" has been advanced. Quotations will be furnished on request.

Burroughs, Wellcome & Co.,

Snow Hill Buildings, LONDON, E.C.

Cable and Telegraphic Address—"BURCOME, LONDON."

The Kepler Malt Extract.

The many and varied conditions of disease in which the Kepler Extract of Malt is indicated as a food, and the benefits which are to be obtained from its use sufficiently explain the wide popularity it has attained. Our perfected machinery and long experience have enabled us to obtain a product of the highest excellence.

The important alimentary constituents of Malt, Diastase, Phosphates, Maltose, Dextrine, and Albuminoids are present in full percentage in the Kepler Extract. Diastase, the principle which converts insoluble starch into soluble and assimilable sugar, is the chief of these, and the large percentage of it present in the Kepler Extract makes that preparation a most valuable aid to digestion. The soluble phosphates of Calcium, Sodium, and Potassium are food for muscle, bone and brain, and Maltose is a readily assimilated and most nutritious form of sugar. It is said that the dextrines have a special function, viz., that of increasing the secretion of pepsin, and thereby aiding still further the process of digestion.

We claim for the Kepler Extract of Malt that it is manufactured from barley, and barley only; that it is highly nutritious, readily assimilated, rich in that important factor, diastase, and that it contains all the nutritive products of the grain intact. Freedom from coarse and irritating elements makes it the safest aliment in inflammatory conditions of disease. It is an admirable demulcent in irritable states of the throat and in debilitated conditions of the system is unrivalled as a food and digestive aid.

These statements are fully supported by the following eloquent testimonies:—

"The Kepler is the best known, and in this country the largest used, Extract of Malt. It is as distinct an advance in therapeutics as was the introduction of Cod-Liver Oil."—*The Lancet.*

"We can recommend the Kepler Malt Extract Being prepared at a very low temperature, its qualities are not deteriorated nor is its flavour spoiled. It is very favourably spoken of by physicians both in respect to its nutritive and digestive properties, and as being of very agreeable flavour."—*The British Medical Journal.*

"Kepler Extract of Malt is undoubtedly the best, the richest in diastase, and the most largely used. We have witnessed the process of manufacture, have tested it, and are satisfied that it is not only unsurpassed, but unequalled. It is the Extract of Malt which every physician prescribes.' —*The Medical Record.*

Supplied to the Profession at **1/8** *and* **3/-** *per bottle.*

Burroughs, Wellcome & Co.,
Snow Hill Buildings, LONDON, E.C.
Cable and Telegraphic Address—"BURCOME, LONDON."

The Kepler Solution of Cod-Liver Oil in Malt Extract.

The history of Cod-Liver Oil as a therapeutic agent may be briefly described as one long, and, for a considerable period, unavailing attempt to render what was recognized and appreciated as a most valuable repairer of tissue waste, undisturbing to the organism and unobjectionable to the palate. The reason of these early failures is now very plain. Pharmacists had worked and experimented from an entirely mistaken point of view. It had not occurred to any one that cod-liver oil was anything but a medicine and a drug, consequently no one had thought of treating it from any other standpoint Oils which are drugs may be emulsified with perfect propriety, but oils which are foods, as cod-liver oil is now recognized to be, have naturally all their nutritive qualities spoiled when sophisticated in the many and various ways which pharmacists tried with so small a measure of success.

The Kepler Solution is the only preparation that provides a rational means of administering cod-liver oil.

It is far and away the best to use, because the oil is actually dissolved in the Extract of Malt. It is not emulsified, and no globules are visible under the microscope. No unpleasant effects are produced when it is taken into the stomach, and it is readily absorbed by the lacteals.

This is an important point to remember, because there are many emulsions thrust on the market which are merely gummy messes or alkaline soaps. In either case, the acid juices of the stomach reduce the oil to its original form. Derangement of the digestive tract invariably follows, causing so great a revulsion of feeling that the patient refuses to go on with the oil under any circumstances. So unfortunate a result never follows the administration of the Kepler Solution. Patients positively relish it, the sensation to the palate is more like that of sweet cream than cod-liver oil.

The *British Medical Journal* thus comments upon this pharmaceutical triumph: "The Kepler Solution is a great advance on anything hitherto attempted in this direction. . . . The production of a solution of cod-liver oil in malt is a great advance, and marks an epoch in the history of rational therapeutics. . . . It is an ideal form for the administration of fat."

The *Lancet* adds its tribute of praise: "Many can take it easily who cannot take the oil."

The *Medical Press and Circular* says: "Is the most palatable and easily digested of any form we have yet seen of administering cod-liver oil."

Burroughs, Wellcome & Co.,

Snow Hill Buildings, LONDON, E.C.

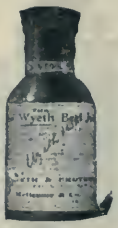
Cable and Telegraphic Address—"BURCOME, LONDON."

C

The Perfected Wyeth Beef Juice.

After making a thorough investigation and exhaustive trial of the The Perfected Wyeth Beef Juice, and after subjecting it to a searching quantitative analysis and microscopic and physiological examination, we felt warranted in accepting the sole agency for its sale in Europe, Asia, Africa, and Australasia. As is our custom in these cases, we refused to associate ourselves with this preparation until we had obtained a full knowledge of the methods and manner of its production, and until we were convinced by the results of painstaking research that we should be justified in recommending it to the medical profession as the best, most palatable, most nourishing, most stimulating, and most strengthening liquid beef on the market.

The striking superiority of the The Perfected Wyeth Beef Juice is evidenced by the following facts. It is prepared from the choicest beef obtainable. It contains all the albuminous principles of beef in an active and soluble form A two-ounce bottle contains all the nourishment of three pounds of clear lean beef. The hæmoglobin of the meat is preserved unaltered, as is shown by the bright arterial colour of the preparation. The proportion of nutrient to stimulating principles is such that it is most acceptable to the stomach in cases of extreme debility. It is as pleasant to the taste as freshly-roasted beef, and in order that practitioners may test this, as well as the other superior qualities of the beef juice, we shall be glad to furnish a small specimen bottle, free of charge, to any medical man who will apply to us for it.



The *Lancet*, reporting on this preparation, says: "Wyeth's Beef Juice is little short of perfection."

The *Medical Press and Circular* says: "There is no need to describe this well-known preparation at this time of day—everyone, whether physician or patient, knows that this is a cold extract of lean beef. It is rich in albuminoid material, of which about 18 per cent. occurs as active and soluble hæmoglobin. In taste and colour it is perfect. Taken cold, a teaspoonful or two will stave off the pangs of hunger in a wonderful way, a fact that may be of service to the overworked journalist or professional man."

The *Chemist and Druggist* reports: "We have examined the juice and find that it has distinctive peculiarities which arrest attention, and which are likely to gain for it a large measure of esteem from the medical profession. Keeping in mind the superior palatability of the preparation, we have here a highly nutritious and restorative food."

It is not a preparation for making soups, bouillons, or ordinary so-called beef teas, but is a pure concentrated nourishing and stimulating food, requiring but small doses to produce its effect.

Supplied to the Medical Profession at **2/10** *per bottle.*

Burroughs, Wellcome & Co.,

Snow Hill Buildings, LONDON, E.C.

Cable and Telegraphic Address—"BURCOME, LONDON."

Anti-Diphtheritic Serum.

This valuable therapeutic agent has proved eminently successful in the treatment of Diphtheria. None of the disagreeable sequelæ attributed to the new treatment have followed the use of Serum issued by us, or by reliable institutions. The great danger that menaces the advance of this most valuable method of medication lies in the fact that many unreliable and worthless serums have been placed on the market, with the result that in many cases physicians have been disappointed. Prescribers should, therefore, be careful as to the source of their supply. With the aid of a distinguished London bacteriologist who is thoroughly conversant with everything relating to the discovery, we were the first firm in England to prepare the liquid Serum, and first in the world to produce a dried Serum of full potency. Having spent large sums of money in experiments and in the fitting of a properly equipped bacteriological laboratory, we think it not unreasonable to request physicians who have tried the Anti-Diphtheritic Serum treatment with negative or unsatisfactory results, to state clearly, when reporting cases to the medical journals, the source of their supply, so that the manufacturers of reliable Serums may be clearly distinguished from those less successful.

The discovery, in our laboratories, of the method of preparing a scale serum of full potency has conferred a great boon on physicians and patients alike. One of the chief objections to the application of the serum treatment of diphtheria in private practice has always been the large size of the injection which has been considered necessary, and the formidable size and appearance of the syringe required for the operation. Patients, who may have consented to the use of antitoxin, not at all seldom alter their minds when they see the syringe and the bulk of liquid which it is proposed to inject. This real difficulty is entirely overcome by the use of the dried serum. It is readily soluble in three times its weight of water, and then forms a serum of full potency. It keeps perfectly, may be used with a comparatively small syringe, and seems to be less liable to cause a rash than the ordinary liquid serum. Owing to the fact that the dried serum will keep indefinitely general practitioners find it possible to keep by them sufficient not only to provide against emergencies, but also to meet any calls that may be made upon them. Each tubeful, containing one gramme, is equal in immunising power to 10 c.c. of the liquid serum. In making up the solution add the dried serum to the water, previously sterilized, rather than the water to the serum, and shake up for a few seconds until completely dissolved.

Supplied to the Medical Profession in either the liquid or lamellar form, at a uniform price of **1s.** per tube or phial containing one therapeutic dose of 600 units (Behring).

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Snow Hill Buildings, LONDON, E.C.
Cable and Telegraphic Address—"BURCOME, LONDON."

THE BEST BEEF TEA

In Two Minutes.

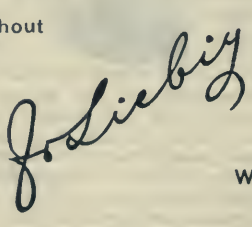
LIEBIG "COMPANY'S"

Extract of Beef.

SUSTAINING AND STIMULATING.

NO ADDED SALT OR WATER.

None is Genuine without SIGNATURE (as annexed)



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Recommended by the Leading Physicians throughout the World.

Invaluable during Convalescence.

Retained when other Food is Refused.

THE

MEDICAL ANNUAL

AND

PRACTITIONER'S INDEX.

HUMANIZED MILK.

For INFANTS and INVALIDS.

Specially Prepared Whey.
Special Milk Food.
Sterilized Milk & Cream.
Peptonized Milk.
Koumiss.

SAMPLES FREE TO MEMBERS OF THE MEDICAL PROFESSION.

TO BE OBTAINED ONLY FROM

THE AYLESBURY DAIRY COMPANY,

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St. Petersburgh Place, LONDON.

THE

MEDICAL ANNUAL

AND

PRACTITIONER'S INDEX:

A Work of Reference for Medical Practitioners.

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PREFACE.

IN the preparation of the fourteenth volume of the "Medical Annual," we have endeavoured to maintain its reputation as a practical work of reference to which the practitioner can turn for the most recent information upon every subject connected with his profession. To accomplish this successfully, it is necessary that we should obtain a large amount of information at first hand from those who are engaged in developing special departments of knowledge, and as medical science has no geographical limits, our contributors must be sought for in all parts of the world. Many of the articles received require for their full elucidation the aid of illustrations in colour, or black and white, and all require careful editing and arrangement, in order to render the information they contain readily available to our readers.

It will be understood that much time, labour, and anxiety are involved in the production of each volume, and these are sometimes increased by the fact that important subjects are announced while the work is passing through the press, which, if not included in the volume, would render it less valuable.

We trust our subscribers will take this into account when disappointed because the "Annual" is not published

earlier in the year. We fully recognize this wish, and will continue to make every effort to meet it.

Professor Röntgen's discovery was only announced in the present year; but the interest in it is so great that we have included a special contribution on the subject, with illustrations, which we think will interest our readers.

We must express our warmest thanks to all the contributors to this volume for the kind way in which they have assisted our efforts to make it worthy of the kind reception given to its predecessors.

The "Medical Annual" Offices,
Bristol, England, February, 1896.

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THE MEDICAL ANNUAL.

PART I.—THERAPEUTICS.

The Dictionary of New Remedies,

AND REVIEW OF THERAPEUTIC PROGRESS FOR 1895.

THERAPEUTIC REVIEW FOR THE PAST YEAR.

BY PROF. H. A. HARE, M.D.,

Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia, and Editor of "The Therapeutic Gazette."

IT is worthy of note that clinical therapeutics advances with strides quite equal to those made by other branches of medical study, not only in new lines of work but also in rendering old methods of treatment more rational. It is quite as great a gain to discover and understand clearly the manner in which the cure of a disease is brought about as it is to discover a new remedy. Further than this, as drugs of recent introduction are more widely used, untoward influences produced by them are recorded until at last the new remedy, which has been hailed with favour as being *facile princeps*, falls to its true level of usefulness with a certain number of victories and defeats to its credit, and we are able to tell in many instances why it has succeeded in one case and not in another.

One of the more recent methods of reducing fever has, during the past year or two, passed through just such a transition as we have described, namely, the use of **Guaiacol** by external painting in typhoid and other fevers. The very peculiarity of the method of using guaiacol called attention to its employment for this purpose, and it has been given a sufficient trial to enable us to place it in the niche where it belongs. If the favourable reports of some of its early admirers could but have held good throughout all trials guaiacol would be the prince of antipyretics, but unfortunately for its success it was introduced at a time when the profession, having been unduly fearful of fever, had come to regard disturbances of temperature with more complacency. The fact, however, that Da Costa, Robilliard, Bard, and other equally competent authorities strongly recommended

guaiacol, caused many to employ it with asserted advantage, but these favourable views have been modified by subsequent papers by other clinicians who have pointed out its dangers and untoward effects. Perhaps the most noteworthy of these was that of Thayer, who stated that while guaiacol painted in the amount of 15 to 30 drops on the abdomen and groin did cause a rapid fall of temperature in febrile cases, it was always productive at the same time of profuse sweating. Further than this, in Thayer's experience guaiacol only temporarily depressed the temperature, which was apt to speedily rise, this rise being associated with more or less severe chilly sensations. It has also been proved by later reporters that alarming collapse may ensue from the free use of guaiacol in this manner. So much then for the antitheses. The moderate or medium ground which we should take has now been reached. Within the last few months the reports of Anders, McCormick, Carpenter and others, prove beyond all cavil that guaiacol as an antipyretic has a sphere of usefulness, particularly in country practice, where cold bathing cannot be ordered for isolated patients, or where such measures are forbidden by the obstinacy of the patient or his friends. Because of its use externally it seems a little safer than antipyrine or acetanilide, yet in reality has to be used with just as much caution.

The conclusion seems to be that paintings of guaiacol afford useful antipyretic measures for certain cases which do not, or cannot, have the cold bath or sponging, but that they are far inferior to the cold bath in power and safety, and are to be considered the second choice in all cases in which pyrexia has to be reduced. The best method of applying guaiacol, it will be remembered, is to paint from 10 to 40 drops upon the skin where it is thin, as in the groin, and then to cover the part with a piece of oil-silk to prevent the escape of the drug. Often to increase the rapidity of absorption the drug is rubbed into the skin by the finger tips of the nurse.

The rapidity with which the profession recognized that much larger doses of **Strychnine** can be used with advantage than we employed some years ago, has been due to the very valuable results achieved by its hypodermic administration in cases of profound collapse where the patient seemed almost moribund. This success of the drug has led to its use in combating prolonged nervous and circulatory depression, sometimes with good results, sometimes with failure; generally the latter if large doses have been used for any length of time without any other drug. Strychnine is emphatically a whip with a stinging lash, to be applied to the vital powers just at the moment they seem about to fail. For this reason, if used too long, it exhausts the nervous

system in particular, and produces a state of general systemic exhaustion following excessive functional activity. The writer desires to call attention to what he believes is not a sufficiently frequently recognized possibility under these circumstances, namely, that a condition of *strychnine delirium* may be developed in place of the twitching of the muscles or rigidity of the neck, for which we all look when giving massive doses of this drug. Often this delirium occurs chiefly at night, then gradually extends into the day, and finally lasts the entire twenty-four hours. The delusions are often those of persecution, or that the patient is being poisoned—as indeed he is.

While in previous years much space has been utilized in the journals in detailing the results of clinical and other studies on the action of **Anæsthetics,** our attention has lately been more largely concerned with the methods of resuscitation to be employed in cases where respiration and the heart have failed while the patient is under the influence of the anæsthetic drug. Aside from inversion of the body so highly recommended by Chisolm, and more recently by Kelly, who employs this posture with associated artificial respiration, the writer desires to urge the importance of the proper posture of the head under these circumstances.

Howard, of London, in 1889, published a very interesting paper on this topic, which has since been widely quoted. While recognizing the value of his studies, a series undertaken by Edward Martin and the writer have led them to reach somewhat different conclusions in regard to the posture of the head and its influence on the patulousness of the windpipe. Howard's statements in regard to the *rôle* of the epiglottis in cases of arrested respiration in anæsthesia are as follow :—

(1,) The epiglottis falls backward in apnœa and closes the glottis, therefore the first thing in order and importance is the elevation of the epiglottis.

(2,) Traction upon the tongue, however and whatever the force employed, does not and cannot raise the epiglottis, as supposed.

(3,) The epiglottis can only be raised by the extension of the head and neck.

The question which naturally arises first is, Is Howard correct in regarding the epiglottis as the cause of the obstruction? Personally, Martin and the writer believe he is wrong, because in the great majority of cases the air-passages are at once cleared of obstruction simply by drawing the tongue forward, a method resorted to by every one, yet one which, as Howard himself states, and as we have proved, has absolutely no effect on the epiglottis unless the traction is applied

well back on the dorsum of the tongue by a tenaculum. It is, therefore, a fair conclusion, that the epiglottis is not the chief cause of the obstruction, and that the tongue is more frequently at fault; but as any obstruction is undesirable, and as the epiglottis does sometimes certainly partially close the windpipe, what shall be done to govern its position? Howard states that this may be accomplished solely by the posture of the head. The method which he recommends is as follows :—

"Having, by bringing the patient to the edge of the table or bed, or by elevation of the chest, provided that the head may swing quite free, with one hand under the chin and the other on the vertex, steadily but firmly, carry the head backward and downward; the neck will share the motion, which must be continued till the utmost possible extension of both head and neck is obtained. Sometimes a slight elevation and extension of the chin will at once check stertor or irregularity of breathing; but understand, the extension, which can in no case do harm, should always be rather more than appears necessary. It should never be forgotten, however, that the full effects of extension as above described can be secured with certainty only by making the extension complete as directed."

Once more, the studies which have been made by Martin and the writer on this subject have convinced them that Howard's advice is not practically valuable. Although there can be no doubt that the changes described are produced, so far as the position of the epiglottis is concerned; on the other hand, such a position of the head and neck as he directs has the effect of strapping the soft palate over the dorsum of the tongue, thereby cutting off the entrance of air through the mouth, and renders the nostrils the only path for its entrance. As the nasal cavities are, in many persons, obstructed by exostoses, hypertrophies, or polyps, the nostrils do not afford a sufficiently certain entrance space for air, and removal of glottic closure by this posture may cut off the air higher up.

If, on the other hand, the head is extended and simultaneously *projected forward*, so that it holds a position, in regard to the plane of the body, taken by the head of a trained runner, both the tongue and epiglottis are raised, and the soft palate is so drawn as to permit of free breathing through the mouth as well as the nose.

Closely associated with this question are the methods urged by Laborde for the resuscitation of persons suffering from asphyxia, to which he has given the name "rhythmic lingual traction." Its employment has been favourably reported to the Paris Academy of Science, and reports from those who have used it are most

encouraging. Martin has reported a case in which, owing to lack of assistance, the ordinary methods of artificial respiration could not be used, owing to the bulk of the patient, yet Laborde's rhythmic traction of the tongue restored respiration when the patient seemed breathless and dead.

The method consists in grasping the tip of the tongue, and drawing it forward and upward ten or twelve times a minute for some minutes, when a few gasping respirations followed by deeper ones often ensue, and normal respiration is established. Laborde has shown that the effect of this traction is to reflexly stimulate the respiratory muscles, particularly the diaphragm. He states, that if he cuts the sensory nerves of the tongue these tractions have no effect, and that if the phrenic nerves be cut and the sensory nerves left intact there is also no effect. He supposes, therefore, that the lingual sensory nerves and the phrenic nerves form the reflex arc which, in association with the medulla, cause movements of the diaphragm.

From the time at which **Chloroform** was first introduced into medicine as an anæsthetic until to-day it has been universally recognized that parturient women seem to possess an immunity to its poisonous properties, and it is one of the curiosities of medical literature that while the journals fairly teem with reports of chloroform deaths when the anæsthetic has been given for ordinary operations, that death from this drug in parturient women is almost unknown. Various explanations have been put forward by obstetricians and others as to the reason of this apparent immunity. It has been thought by some that it lay in the fact that such small quantities of chloroform were given that poisoning by it was practically impossible in such cases.

But in opposition to this view it is worthy of notice that a large number of deaths under chloroform have occurred during the time that the first inhalations were being given and before the patient had passed completely under its anæsthetic influence. Again, it is worthy of note, in opposition to this view, that the chloroform is frequently given to a parturient woman either by a nurse, assistant, or oftentimes with the assistance of the woman herself, should necessity require that the physician be busied with the delivery of the child. It is evident, therefore, that such an explanation cannot hold good.

A second view has been, that in many cases of pregnancy there is developed a temporary hypertrophy of the heart, and that this hypertrophy so strengthens the cardiac muscle that the drug does not so readily depress it. In opposition to this view it is to be remembered, first, that the dominant action of chloroform is not upon

the heart, but upon the vaso-motor system and the respiration ; and, second, that the small amount of cardiac hypertrophy seen in the average case is insufficient to produce immunity of itself.

It seems to us that the correct explanation of the ability of parturient women to take full amounts of chloroform without accident lies in the well-known influence which is exercised by pain upon the vaso-motor centres. Whatever may be the differences of opinion in regard to the influence of chloroform upon the heart, every investigator so far has admitted that its primary influence is upon the vaso-motor centre, and complete vaso-motor paralysis is capable of producing death, if at the same time the respiration and heart are somewhat depressed. (See also article "Anæsthetics," p. 10.)

In the physiological laboratory it is customary to irritate a sensitive nerve whenever it is desired to decide as to the integrity of the vaso-motor centre ; or, in other words, pain produces a rise of arterial pressure by stimulation of this centre. We believe that the immunity of parturient women to chloroform depends upon the fact that frequently repeated labour-pains continually stimulate the vaso-motor centre, and so antagonize the depressant influence which is exercised by chloroform upon this important portion of the nervous system. Certainly it would seem very probable that this explanation is the correct one, and we are confident that if the physician will feel the radial pulse of the patient, at the time of the onset of any severe pain, he will find that arterial pressure is greatly increased.

As typical examples of the effect which pain produces in the human being in this respect, we may cite the hard, corded pulse of early acute peritonitis, or the equally high-tension pulse of lead, renal, or hepatic colic.

The assertion of Daremberg that the application of **Ice** to the scrotum or vulva in cases of hæmoptysis aids very materially in checking the flow of blood, seems to us to depend upon rational grounds aside from the good clinical results which he claims for it, the more so since Yeo has commended the plan by suggesting that frozen compresses be so used. If the statements of Winternitz are correct, and it is possible to affect the circulation in distant areas by hot or cold applications to limited parts of the body, it is possible that the circulation in the lung might be controlled by such means.

For many years the profession has recognized the necessity of some substance which would act as a digestant of the starches, as do pepsin and pancreatin on proteids, and to this end various preparations of malt, containing varying proportions of diastatic power, have been

administered with but little result, except for the gain in nutrition caused by the food stuff present in the liquid. This difficulty has, we think, been largely overcome by the researches of a Japanese investigator, Takamine, who has succeeded in isolating a **Diastase,** which is tasteless, soluble, and powerful enough to convert from one hundred to one hundred and fifty times its own weight of starch into glucose. In the limited time that this preparation has been before the profession it has seemed to possess all the properties that theoretically belong to a substance useful in aiding in the digestion of the starches, and to rival the animal ferments employed for other forms of deficient digestion.

The treatment of opium poisoning by two comparatively new methods, in addition to those which have been employed for years, has found favour with those of experience, namely, the use of **Permanganate of Potassium** and washing out the stomach repeatedly, on the ground that morphine is eliminated by the gastric mucosa and thus constantly reabsorbed. The employment of permanganate of potassium brings good results by reason of the fact that it oxidizes the morphine and the other alkaloids of opium, and for this reason it is only of value when the physician is sure that the drug remains at least in part in the stomach. To give permanganate of potassium hypodermically in opium poisoning shows a greater degree of enthusiasm than knowledge on the part of the physician, for permanganate of potassium at once becomes decomposed in the presence of organic matter, and is changed in the subcutaneous tissues long before it could be absorbed and seek the morphine through the devious paths of the blood vessels. In those instances where this method of treatment has been employed with asserted good results, the pain of the frequently repeated hypodermic injections and the other drugs employed have really been the saving measures.

The method of washing out the stomach in cases of morphine poisoning for other purposes than the mere removal of the original dose of the drug, was suggested by the studies of Tauber and Alt, and by those of Leineweber, who showed that the gastric mucous membrane eliminates the poison. More recently, Hamburger has reported an interesting case of a man who, having taking poisonous quantities of opium, was subjected to repeated lavage, with the result that each washing contained substances which gave fine alkaloidal reactions, and he urgently advises the use of the stomach tube in such cases for this reason, thoroughly endorsing the recommendations derived from the studies of the investigators already quoted.

The writer has recently had occasion to write an article on the treatment of diphtheria, in which he condemned the use of **Chlorate of Potassium** in the treatment of this disease. Much has been said on this subject, but, nevertheless, many physicians still employ this drug in full doses as a matter of routine practice.

Half a century ago, through the writings of an eminent Irish practitioner, many of the profession were led to believe that chlorate of potassium yielded its oxygen to the blood in large quantities, and was, therefore, a valuable drug to administer when the oxidation processes of the body were defective, or even where, through impaired respiratory function, cyanosis and dyspnœa were pressing symptoms.

As a matter of fact, chlorate of potassium does not give up its oxygen until it has been heated to a degree far above that which the human body can endure, and it has been proved again and again that it not only enters the blood as chlorate of potassium, but is so eliminated. Partly because of the idea that chlorate of potassium would, in the way mentioned above, relieve dyspnœa, and partly because it has a useful effect when locally applied to inflamed mucous membranes, and, finally, because it is well known that this drug is eliminated in the saliva, it has been the custom of many physicians to give chlorate of potassium in full doses internally in cases of diphtheria, with the idea that it acts favourably upon the pathological process characteristic of this disease. The writer believes that all cases of diphtheria which take chlorate of potassium internally, may be divided into the two classes: first, those which get well by lucky accident; and, secondly, those which die quite as much from their physician as from their disease.

Chlorate of potassium, in the first place, is one of the most poisonous salts of the potassium group, ranking next to the cyanide of potassium in its lethal properties among the medicinal salts of potassium. In addition to the peculiar poisonous influence of potassium itself, the salt is exceedingly irritating to the kidneys, utterly destroying the functions of these organs when taken in poisonous dose. The progress of medical science has shown us that in diphtheria the patient dies sometimes from the obstruction to respiration, but far more frequently from the toxæmia which arises from the absorption of poisonous materials from the area upon which the membrane is developed. It is the function of the kidneys to eliminate these poisons, and the difficulty in many cases of diphtheria is that the kidneys become overwhelmed by the poison and are themselves so disorganized that the toxic materials rapidly accumulate in the blood with disastrous consequences to the patient.

As chlorate of potassium possesses no oxidizing properties, such as have been claimed for it, and as it is an irritant to the kidneys, its administration to such cases is not only useless, but by throwing a double load of elimination upon the secreting epithelium of the kidney, distinctly militates against the recovery of the patient.

There is still one topic which the writer wishes to speak of before closing, namely, the use of **Acetanilide** as a surgical dressing in place of iodoform or other drying antiseptic powder. Used pure or diluted by the addition of boric acid in varying quantity it may be most successfully employed in cases of chancre and syphilitic condylomata. Gauze may be infiltrated by powdered acetanilide, and this preparation substituted for iodoform gauze in many instances in the treatment of sinuses or fistulous tracts. While the drug has been largely used by various surgeons for this purpose, the paper of Morton is perhaps the best article yet written detailing its extended use. (See also article "Antiseptics, Local," p. 21).

ALCOHOL (in Diseases of Children).

Henry Dwight Chapin, M.D., New York.

Dr. A. Seibert[1] considers that all forms of gastro-intestinal disturbance in children should be excluded from the list of diseases in which alcohol is beneficial. In acute cases, even in cholera infantum, large quantities of water with a small amount of black coffee or tea will stimulate better than alcohol. It is especially irrational and harmful to administer alcohol in the diarrhœas of children before the stomach and bowels have been freed from all putrefying material.

In typhoid fever, the author rarely gives alcohol to children or adults. In fibrinous pneumonia and broncho-pneumonia in children, he disapproves of the enormous quantities of alcohol that are frequently given. Alcohol-fed children will digest less perfectly in pneumonia than those to whom it is not given. In **Diphtheria**, the free use of alcohol has been universal. In mild cases the author does not administer it. Whenever the heart seems to fail he uses it in large doses, but only for a short time. In nephritis, alcohol in large doses can only do harm.

REFERENCE.—[1] "Archiv. Ped.," May, 1895.

AMYLENE HYDRATE. [*Editorial.*

Harmack and Meyer[1] have arrived at the following results after careful investigation of the physiological properties of amylene hydrate. Like alcohol, it first excites and then successively paralyzes all the nerve-centres. In graminivorous animals quiet sleep is pro-

duced, whereas in carnivora the symptoms of excitement and intoxication are more pronounced. The fatal doses were found to be 15 to 30 grains per kilogramme weight of animal. A very marked diminution of temperature is produced, intensifying the danger to life. **Muscular Spasms** produced by poisons, such as santonin and picrotoxin, are delayed or alleviated. The excretion of urea is diminished, and, finally, it cannot be employed subcutaneously, owing to the severe pain produced.

REFERENCES.—[1] "Zeitsch. f. klin. Med.," vol. xxiv, 1894; "Brit. Med. Journ.," Oct. 20, 1894.

ANÆSTHETICS (General).

"There appears of late to have been an increase rather than a decrease in the number of deaths under chloroform," Dr. C. F. Marshall (late Anæsthetist to the Hospital for Sick Children, Great Ormond Street) tells us[1], and he asks the question, "*Whether it is ever necessary, and, if not, whether it is justifiable to give Chloroform?*" He says: "I maintain that it is never necessary to use pure chloroform as an anæsthetic, and that when used it should be mixed with ether. The most satisfactory combination, so far as my experience goes, is a mixture of equal parts of chloroform and ether, which can be given on a piece of folded lint with the same ease as chloroform. The advantages of this mixture are the following:—

"(1,) The ether acts as a stimulus, counteracting the depressing effects of the chloroform on the heart. (That chloroform has a depressing effect on the heart is a clinical fact, whatever the results of the Hyderabad experiments may attempt to prove.)

"(2,) During the commencement of the administration and during the struggling stage the patient is chiefly breathing ether, which evaporates more quickly, and so the initial stage is tided over.

"(3,) During struggling, for the above reason, the anæsthetic can be pushed with much more safety than can chloroform alone.

"(4,) For the same reason there is less shock in those too frequent cases where the surgeon commences to operate before the patient is ready.

"The only disadvantages are: (1,) That about two or three times as much anæsthetic is used; (2,) Sometimes rather profuse salivation is excited. These are, however, trivial points compared with the greater safety of the mixture. I am well aware that mixtures of chloroform and ether in various proportions have been used for some considerable time. The point I wish to urge is, that there is never any occasion to use chloroform, except in the form of a mixture with ether; and, therefore, considering the number of fatalities from chloroform, that

its employment by itself as an anæsthetic is unjustifiable, and should be abolished."

In relation to this point some investigations made by Dr. P. Rosenberg[2] are of interest. He claims to have demonstrated by experiments on animals that cardiac syncope during chloroform narcosis is due to reflex irritation originating in the nasal mucous membrane, and transmitted to nerves having a paralyzant action upon the heart and respiration. By anæsthetizing the mucous membrane of the nose with a spray of cocaine these reflex disturbances are prevented, and, in view of the fact that cocaine is an antidote to chloroform, its absorption will in another way obviate the injurious effects of the latter. If the nose is previously cocainized, anæsthesia is more readily induced, is attended with less disturbances, and especially is free from after effects. The patients wake up rapidly, and experience none of the usual discomforts. This method is undoubtedly worthy of trial.

Considerable discussion has taken place in Germany as to the relative value of chloroform and ether.

Gurlt[3] showed by statistics that in 133,729 chloroformizations there occurred forty-six deaths, or 1 to 2907 anæsthesias; whereas in 14,646 etherizations there occurred only one death. Still more recent statistics[4] show mortality after ether of 1 in 13,160, while that after chloroform was 1 in 2647.

Prof. J. Mikulicz, of Breslau, is not satisfied that the great superiority of ether has been proved. He records[5] some unpleasant experiences. In the first group of cases asphyxia occurred during etherization, and includes three cases. The pulse and respiration ceased, but the patients recovered.

The second group includes two cases in which collapse occurred after etherization. After artificial respiration and injections of camphor the patients reacted.

The third group includes four cases of acute bronchitis; all recovered.

The fourth group includes two cases of pulmonary œdema and pneumonia; one of these proved fatal. The operation had been done for stenosis of the œsophagus; etherization lasted sixty-five minutes, 175 cubic centimètres of ether being consumed. Death occurred on the twelfth day after operation. No autopsy.

Mikulicz insists that these cases of bad effects from ether show that it must be given with as much care as chloroform, and by a skilled physician.

He concludes: (1,) That ether has dangers which have not been

considered in the statistics up to the present time; and (2,) That the lessened danger of etherization, as compared with chloroformization, has not been proved.

The question is raised by Bruns[6] whether, although ether may have more immediate safety than chloroform, it does not tend to produce broncho-pneumonia as an after result of its irritating effects on the lung tissue, and that the deaths resulting from this do not appear in the statistics of Gurlt.

Poppert[7] has described a case of ether death due to œdema of the lungs, and has collected six other cases in which death occurred following lung congestion after etherization. Poppert ascribes all these deaths directly to the ether, and comes to the conclusion that if statistics were collected in which all the late effects rightly belonging to this agent were included, it would be found to be twice as dangerous as chloroform.

Of course it has to be proved that such disorders intervening after operations are due to the ether employed. Acute congestion of the lungs is not an infrequent sequela of abdominal operations, and possibly may have no connection with the form of anæsthetic employed.

A point arises as to the form in which the ether is administered.

It has long since been shown that ether kept in the light decomposes and forms irritating products. Bruns affirms that admixture of air with the ether produces similar results, and advises, therefore, that ether should be stored in jars which are completely filled with the agent, which are firmly closed and protected from light, and kept in a cool place until used. If at an operation all of the contents of the flask is not used, the remainder should not be employed for narcotizing, but only for external use.

Another important question arises in respect to the relative safety of these two anæsthetics in renal disease. G. B. Wood[8] states that prolonged anæsthesia by ether is capable of causing marked congestion of the kidney, with cloudy swelling of the cells in the convoluted tubules, and he believes that very prolonged or repeated etherization may produce a desquamative nephritis. For this reason he thinks that ether should be given very cautiously, if at all, to persons whose kidneys are not in a normal condition. But although this communication might cause a swing of the pendulum in favour of chloroform in this particular disorder, we have the researches of Alexandri[9], which show, while the effects of chloroform upon healthy kidneys are practically *nil*, in patients with renal affections this condition of perfect safety cannot be said to exist, and he believes, further, that

chloroform under these circumstances is to be avoided, if possible, and that prolonged or repeated anæsthesias by it in such cases are unjustifiable.

These investigations taken together emphasize the fact that both chloroform and ether have a tendency to irritate an inflamed kidney, and that both should be administered with caution when renal disease is present.

Referring again to the question of death from anæsthetics, Poucet[10] states that when, under general anæsthesia, there is apparent death, tracheotomy is absolutely indicated; that it is a means of prime importance upon which the surgeon should count, and upon which he should always rely when other methods have failed. An anæsthetic should never be given without considering this aspect of the case, that is, no matter what operation the surgeon is performing, he should have ready at hand the instruments required for tracheotomy. This operation, which allows of artificial respiration to its fullest extent, or direct insufflation by means of a cannula, and which does not interfere with the rhythmical tractions of the tongue, is likewise indicated in asphyxia from other causes, or in prolonging syncopal conditions, no matter how these may have been produced; as, for instance, apparent death from electrization or from inhalation of toxic vapours or gases.

Stedman, of Sheffield,[11] proposes that ether should be administered by passing the vapour into the rectum, and details ten cases. Previous experiments in this direction have been unsatisfactory, as many cases of melæna have been recorded after the administration of ether per rectum, and intestinal irritation and diarrhœa are common sequelæ. Dr. Dudley Buxton recommends this method, and states that its only disadvantages consist in the greater length of time required to anæsthetize the patient and the subsequent discomfort which is sometimes present. He believes that if the vapour of ether is gently passed into the rectum, the greatest care being exercised that none of the liquid itself finds entrance, the disagreeable symptoms will not frequently occur, and directs that the bottle containing the ether, to the amount of 2 to 3 ounces, should be plunged into a second vessel containing water at 120° F. The ether vessel communicates by an india-rubber tube with a glass interceptor devised to prevent the entrance of liquid ether into the rectum, and from this last is run another short tube to the anus. The usual symptoms of anæsthesia are developed generally more rapidly in children than in adults, and he states that the time required varies from three minutes to thirty minutes.

REFERENCES.—[1] "Brit. Med. Journ.," Nov. 17, 1894; [2] "Allg. Med. Cent. Ztg.," No. 99, 1894; [3] "Verh. der Deutsch. ges. Chir.," 1893, ii., S. 8; [4] Ibid., 1894, ii., S. 11; [5] "Verh. der Deutsch. ges. Chir.," 1893, ii., S. 8; [6] "Berlin. klin. Woch.," No. 51, 1894; [7] "Rep. Therap. Gazette," April, 1895; [8] Ibid., March, 1895; [9] "Il Policlinico," June, 1894; [10] "Lyon Médical," Jan. 13, 1895; [11] "Quarterly Med. Journ.," Jan. 1895.

ANÆSTHETICS (Local). *Bransford Lewis, M.D., St. Louis.*

In July, 1894, at the German Congress of Surgeons, Dr. Schleich[1] announced and detailed a new method of producing local anæsthesia by the use of intra-cutaneous (rather than sub-cutaneous) injections of very dilute solutions of various drugs; and he indicated the distinctiveness of the method by terming it Infiltration Anæsthesia. Later, in a monograph,[2] the author treated the subject more extensively, and gave the results of its use in some three thousand operations, minor and major.

The principle of the method consists in injecting intra-cutaneously certain solutions, and dissipating the sensibility of the peripheral nerves by the pressure of the infiltrating fluid, by the anæmia which it causes, and by the comparatively low temperature at which it is injected—three effects secured by the *fluid itself* rather than by any drug which it may contain. As a matter of fact, the drugs used are of only incidental importance.

It has long been known that the injection of fluids in some considerable quantity would cause a deadening of the sensibility of the part; but the induction of this insensibility has not been sufficiently controllable to place it within the limits of wide surgical practicability; and the initial pain to which it would give rise was another objectionable feature which discounted its usefulness.

By thought and much experimentation these problems, as well as others, have been practically overcome by Dr. Schleich; so that for the kind of surgery to which the *injection* of anæsthetizing fluids is applicable, whether "minor" or "major," the use of the older cocainizing methods is liable to be entirely superseded by the infiltration method; and the position of chloroform and ether narcosis is already being assailed by those who have made practical use of it.

If a syringe needle be inserted obliquely into the skin, the point reaching just below the epidermal layer, and a few drops of the proper fluid be injected there, an elevated wheal, looking like a mosquito-bite, will be the result; and tests with a needle or knife immediately afterwards will show the entire area of the wheal to be absolutely insensible, while the sensibility of the skin just beyond the œdematous area is not disturbed in the least.

Experimentation has shown that the promptitude and practical efficacy of the anæsthesia so induced depends on several factors: (1,) The density of the fluid used; (2,) The character and strength of the drug or combination of drugs embodied in the solution; (3,) The temperature of the latter; (4,) The condition (of health or disease) of the tissues to be anæsthetized; and (5,) The maintenance of complete œdema of the tissue to be operated upon.

Density of the Fluid.—It has been found that a physiologic salt solution, 0·6 per cent., would cause a wheal, but not an anæsthetic one; while a 0·2 per cent. salt solution produced sufficient anæsthesia to allow of the removal without pain of a nævus from the neck of the eminent Dr. Bergmann. Solutions of sugar, 3 per cent.; potassium bromide, 3 per cent.; morphine, 0·1 per cent.; carbolic acid, 0·5 per cent.; and caffeine, 2 per cent., all show markedly anæsthetic effects, while above and below these strengths they become irritative and painful. This develops the second-named factor—

The Character and Strength of Drugs used.—While it is a fact that the various agents mentioned will produce anæsthesia after a certain length of time, the first and primary effect of some of them is irritative, and they excite pain until their secondary, anæsthetic effect begins to prevail. In order to obviate this difficulty, use is made, in the formula, of certain drugs (cocaine, morphine) which in proper strength have an immediate anæsthetic effect, thus doing away with the transient irritative effect of the other, secondarily, anæsthetic drugs in the combination. This is especially important when considered in connection with—

The Condition (of Health or Disease) of the Structures to be Operated upon.—While the difference in the primary-irritative and the secondary-anæsthetic effect may not be so sharply marked in normal, healthy tissues, as in the removal of a nævus, in the case of inflamed structures (crucial incisions into a carbuncle) it is markedly prominent, and unless it were prevented, it would defeat the purpose and advantages of the method. Happily, this is accomplished in either of several ways: By using such drugs in the combination (cocaine, etc.) as have an immediate anæsthetic effect, even though diluted to the degree mentioned; by beginning the anæsthesia in healthy structures, and continuing it by successive injections into the unhealthy ones; by producing a temporary spray-anæsthesia of the inflamed structures, sufficient to allow of the introduction of the infiltrating fluid. Of these, the first will be found to be most commonly useful, and it is for that reason chiefly that cocaine is used at all. However, the point must be emphasized that though cocaine

is used in this way, it is vastly different from the manner of using it hitherto in vogue, since, instead of using a strength of from 2 to 10 or 20 per cent., the strength entirely capable, by this method, of producing the anæsthesia desired is that of 100 or 200 per cent.; and instead of a very few drops producing a toxic (perhaps a highly dangerous) effect, one or two or three *ounces* may be used without the slightest systemic symptom.

Temperature of the Injected Fluid.—It has been observed that the same strength of solution, when used cold, is much more highly anæsthetic than if it is warm. For this reason it is advised to keep the bottle of fluid on ice before and during the operation.

Complete Infiltration.—Every tissue of the body, without exception (skin, muscles, glands, mucous membrane, nerves, etc.), becomes insensible to pain when infiltrated in the manner described. This obtains for bone and the hard structures, as well as the soft ones. Bone is reached either through infiltrating its periosteum or by injecting into the medulla. Nerve trunks are anæsthetized separately, first by applying 5 per cent. carbolic acid solution, and then, through this, inserting the needle and fluid.

Only the infiltrated, artificially œdematous tissue is anæsthetic, the tissues just outside of which retain normal acuteness of sensibility. Consequently, in the course of an operation, with absorption of the infiltrated fluid, it is necessary to renew the injections, or extend their area co-incidently with the operative field. After infiltration the anæsthetic condition lasts from fifteen to twenty minutes.

With the proper fluid, anæsthesia ensues *immediately* on its being introduced into the tissues, and lapse of time is not requisite for developing insensibility. This, again, is in marked contrast to the effect of the older methods of producing anæsthesia. Its advantage is great.

Hæmorrhage.—Anæmia being one of the effects of the method, it may be supposed that there will be less bleeding (oozing) than under ordinary circumstances. This is the case. And distortion of the tissues from the infiltrated fluid does not cause any especially increased difficulty in securing and tying or twisting bleeding vessels. Nevertheless, in operating on deeper structures, the use of the syringe needle involves the risk of piercing blood vessels, nerves, etc., for which care must be observed.

Formulæ.—In his various surgical procedures Dr. Schleich finds the following three solutions of graded strengths to answer all purposes:—

Strong solution, No. 1:—

℞ Cocain. Muriat.	gr. iij	Natr. Chlor.	gr. iij
Morph. Muriat.	gr. i–iij	Aq. dest.	ad ℥iij

M. Sterilisat. adde sol. Acid. Carbolic. 5 per cent. gtt. iij.

Medium strength solution, No. 2 :—

℞ Cocain. Muriat.	gr. iss	Natr. Chlor.	gr. iij
Morph. Muriat.	gr. i–iij	Aq. dest.	ad ʒiij

M. Sterilisat. adde sol. Acid. Carbolic. 5 per cent. gtt. iij.

Weak solution, No. 3 :—

℞ Cocain. Muriat.	gr. i–vj	Natr. Chlor.	gr. iij
Morph. Muriat.	gr. i–xij	Aq. dest.	ad ʒiij

M. Sterilisat. adde sol. Acid. Carbolic. 5 per cent., gtt. iij.

Solution No. 1, Dr. Schleich uses for operating on inflamed or hyperæsthetic areas ; No. 2, for most operations; No. 3, for superficial operations on nearly normal tissues.

To carry out the aims of asepsis, he recommends that only sterile solutions be used ; and to this end, he advises that the reservoirs be sealed with scorched-cotton stoppers, and that from these smaller vessels should be filled at the time of operating.

I have made use of the infiltration method in operating on buboes (enucleation) ; in opening a prostatic abscess through the perinæum ; in circumcisions, and some other minor procedures.

In working in superficial structures, its effect is all that one could wish, and beyond criticism. While in the deeper parts of wounds, such as are met with in evacuating prostatic abscess, enucleating buboes, etc., it is more difficult to secure complete and absolute anæsthesia, on account of the care necessary to prevent the injury of deep-lying structures, still, with the increased skill obtained by practice, objections on this line are removed, and local anæsthesia is effected with proportionately increasing success. It appears to me that testicular ablation, for instance, could be done without a particle of suffering on the part of the patient.

The after-pain I have not found to be greater than with other modes of anæsthesia ; and the other disagreeable after-effects of general anæsthesia are, of course, avoided. Two of my patients were over sixty years old, yet they felt as well after as before the operations. No symptom of intoxication has become evident in any case that I have observed, and I have not been sparing in the use of the fluid.

I have made use of a larger syringe and longer needle than that recommended by the author, and I think this facilitates matters considerably, obviating numerous successive punctures in order to fill up the tissues sufficiently. The infiltration may be begun with a small syringe and fine needle, and continued, without pain, with the larger.

REFERENCES.—[1] "Therap. Monat.," No. 9, 1894 ; [2] "Schmerzlose Operationen," Berlin, 1894.

ANHALONIUM LEWINII (Mescal Button).

The mescal button belongs to the order of *Cacti*, and is found in the valley of the Rio Grande in Mexico. It grows only to about the height of half an inch above the ground. The body is comparatively thick, and is surmounted by a top, which is composed mainly of the blunt leaves of the plant. In the centre of this top is a tuft, about one-half to one inch in diameter, composed of yellowish-white filaments or hairs. These *tops*, when dried, constitute the mescal buttons, the commercial form of Anhalonium Lewinii (*Fig.* 1).

Fig. 1.—Mescal Button.*

Drs. D. W. Prentiss and F. P. Morgan,[1] of the Columbia University, Washington, have given a very interesting record of the history, and physiological action of this plant, from which we gather the following particulars.

Constituents.—Dr. Lewin, 1888, obtained from it a brown syrupy liquid to which he gave the name "Anhaloin." From this liquid Heffter obtained three alkaloids. The first was probably the same as the crystallized one by Lewin, and occurred as needle-shaped colourless crystals, of a brilliant character. The second was found as crystals in white rhombic tables, non-lustrous. The third was an amorphous, and very poisonous alkaloid left behind in the mother liquor.

The chemical analysis of this drug is being further investigated by Mr. E. E. Ewell, in the laboratory of the United States Agricultural Department.

Physiological Action.—The Indians employ it as a sort of intoxicant, during their religious ceremonies, the effects produced being rather those of reverie than exhilaration, and accompanied by illusions of colour, etc., of a pleasant character. They appear to suffer from no unpleasant after-effects on the day following the use of the "Buttons." The experiments for testing the physiological action of the drug, were made upon the human healthy body, and are therefore of greater interest than the usual experiments showing toxic effects upon animals.

In the first case, four and a half buttons were taken, weighing from 14 to 15 grammes, the experimenter being a chemist twenty-seven years of age. The following is the report in his own words :—

"At eleven o'clock I retired to my room to prepare for bed. Before doing so, however, I noticed that on closing my eyes I could see all

* Copied from "Therapeutic Gazette."

sorts of designs in brilliant and ever-changing colours. These visions were so pleasing that I at once decided to continue the experiment, and I placed the fourth and a part of the fifth button in my mouth. Then followed a train of delightful visions, such as no human being ever enjoyed under normal conditions. My mind was perfectly clear and active; the power to concentrate my thoughts upon any desired subject was only slightly lessened; seated at my desk, I could write of my sensations and experiences; stretched out upon the bed, with closed eyes, an ever-changing panorama of infinite beauty and grandeur, of infinite variety of colour and form, hurried before me. By concentrating my thoughts upon various subjects successively, the nature of the visions could be determined and considerable control exercised over the time that they remained in view. Perhaps the most pleasing of all the visions of the night were brought to view by my voluntarily thinking intently of the production of Kiralfy's 'America,' as given two years ago. Indeed, during the passage of this and many other visions before my enraptured mental gaze, my pleasure so far passed the more ordinary realms of delight as to bring me to that high ecstatic state in which our exclamations of enjoyment become involuntary. I truly thought that I had experienced great pleasure upon many previous occasions, but the experience of this night was one quite unique in this regard in the history of a lifetime. The tendency of every feature of the experience to prove a source of pleasure was quite remarkable. Efforts to fix the attention upon some subject which should give rise to unpleasant visions resulted in the appearance of myriads of horrible crawling monsters and seas of grewsome forms of human face and body which would cause the ordinarily sensitive human being to shudder. But under the influence of the mescal it merely added another item to the list of the inexpressible delights of my remarkable night's experience."

Besides the visions mentioned, the loss of conception of time and space was a marked feature of the experiment.

About 4 A.M. the effects of the drug began to pass off, and had entirely disappeared by evening. During the day slight depression was experienced with inability to sleep until 9 P.M.

Careful chemical examination of the urine passed during the experiment disclosed the presence of a considerable quantity of at least one of the alkaloids of the drug.

In the report of another experiment, the authors record as follows:—

"Between 11.30 P.M. and 2.30 A.M. seven buttons were taken at regular intervals. Observations taken at hourly intervals showed that the condition of the skin, respiration, and temperature remained

normal throughout the experiment. The pupil began to dilate at 1.30 A.M., and remained dilated until the evening of the following day. The pulse-rate gradually fell from 108 at 11.30 P.M. to 71 at 2.30 A.M., and then rose to 81 at 3 A.M., and continued at this rate and of good quality throughout the experiment. A sedative effect upon the muscular system became apparent at 2.30 A.M., the subject feeling decidedly lazy and perfectly contented.

"At 3 A.M. began the period of intoxication and full effects of the drug. During this time, which lasted until about 7 A.M., he reclined lazily in his chair, disinclined to make the slightest movement. His eyelids drooped, and he scarcely moved his lips and jaw in articulating. His pupils were dilated. There was no exhilaration, but a tendency to reverie. He noticed a fine tremor of the extremities and a rumbling in the ears. He lost conception of time, the intervals between his words and sentences seeming inordinately long.

"Besides these constant symptoms, which persisted during the experiment, another set came on in paroxysms or periods, which would last a varying length of time—from one to five or six minutes or more. The intervals between these periods also varied in length very much. During each paroxysm of this sort he had visions of ever-changing and gorgeously coloured objects, forms, and designs in motion."

Further experiments with the buttons produced a similar train of symptoms, the visions being the most prominent. The effect on the mind was slight, except that there were slowness of thought and loss of power of expression in some cases.

The pupil was dilated in every case, and persisted for twelve to twenty-four hours.

Depression of muscular power existed in every case.

Partial anæsthesia of the skin was present in three of the cases, appearing when the effects of the drug began to wear off.

The heart action is at first rendered more slow and somewhat weaker in quality. This is followed by a rise to the normal in quality and rapidity, which continues during the period of greatest activity of the drug. In the cases in which the muscular depression was greatest, slight, if any, depression of the heart was present.

The respiration was unaffected in all cases except one. In this it seemed to partake slightly of the general muscular depression.

Upon the stomach the drug produced an effect which varied from a feeling of uneasiness and fulness at intervals to nausea and vomiting.

Inability to sleep for at least twelve hours after the effects of the drug commenced to pass off was a marked effect.

Loss of the sense of time existed in all cases.

No constant effect upon the bowels, skin, temperature, and the amount of secretion of the various glands of the body was found.

The mental state described has a decided resemblance to that which is sometimes met with in fever of the typhoidal type, and it seems probable that this drug, when given in moderate medicinal doses may prove useful in such conditions. Its action differing essentially from other drugs, will render it an useful addition to our resources, and we hope to hear of further experiments performed with smaller doses of the drug continued over a longer period.

REFERENCE.—[1] "Therapeutic Gazette," Sept., 1895.

ANTISEPTICS (Local).

Dr. Gwelyn J. Davis,[1] surgeon to the German and St. Joseph's Hospital, Philadelphia, gives the following practical information respecting the merits of various antiseptic dusting powders.

"The substances which I have tried more or less extensively are boracic acid, either alone or mixed with iodoform, aristol, europhen, salicylic acid, acetanilide, and silver leaf. There are others which I have not tried, and there will be new ones forthcoming, but I no longer have hope of discovering a universal dusting-powder or protective. As time passes it is found that a larger proportion of wounds require no application, and do not appear to derive any benefit from it. In an aseptic operation wound there will be only a comparatively small amount of serous effusion, and if this is absorbed promptly by aseptic gauze, it is just as satisfactorily taken care of as if it had passed through the antiseptic covering the wound. The least objectionable application in such cases is the silver leaf, introduced by Dr. Halstead, of Baltimore. He has shown that silver prevents the growth of micro-organisms in its neighbourhood. Therefore, should an objectionable discharge come, the presence of the silver leaf will be of service; it also tends to prevent the dressing from sticking to the wound. In large operations, as excision of the knee-joint, in which considerable subsequent oozing is to be expected, or in operations in which drainage has been employed, I would be inclined to prefer it to a disinfectant powder. My experience with it has been too limited to speak positively in regard to it, but so far it has been favourable. It cannot, however, be introduced into the interstices of a wound as can a powder.

"The properties of iodoform which have made it desirable to me are its power of disinfecting, and keeping sweet an infected wound longer and better than any other substance; also in a suppurating wound it distinctly diminishes the discharge of pus and stimulates granulation.

"Boracic acid is often used, on account of its mildness, as a dusting-

powder ; but while it acts satisfactorily enough if the skin is unbroken, yet if it is vesicated or cracked, then the powder on touching the raw surface produces considerable smarting and pain. On ulcers it does not seem to possess the drying properties found in other powders and is not so efficient as an antiseptic. It is valuable mixed with iodoform, as it then prevents the latter from packing and makes it more manageable.

"Salicylic acid is markedly stimulant in its action on granulating surfaces. It may be used occasionally to hasten the healing of chronic leg ulcers, but it causes too much pain for general use.

"Aristol has always impressed me as being a somewhat inert powder. It has a distinct place, however, in affections of the mucous and serous membranes. One patient in particular progressed very satisfactorily when aristol was dusted upon an ulcerated lip. It seemed to remain in place longer than any other substance. It is of distinct value in peritoneal surgery as a means particularly of guarding against the formation of adhesions. In general ulcers and wounds it is an admirable drying powder, and while not very active, is still not at all irritant.

"Europhen in my hands has not acted so efficiently in infected wounds as has iodoform, while it has proved more irritating. It is stimulating, producing granulations of a peculiar red colour, but its use was at times accompanied by an eczematous eruption around the wound which led to its discontinuance.

"Acetanilide has certain properties which render it valuable in many cases. It reduces the amount of discharge, tends to keep the wound sweet, and, above all, has a distinctly sedative effect. It is speedily dissolved by the wound secretions, so that when the dressing is changed no vestige of the drug is visible. The formation of an impervious scab is not so common with it as with iodoform and aristol. It seems to decompose blood, for the serum which exudes on the dressing is changed by it from a red to a brownish colour. Its sedative properties are so marked as to sometimes render its continuation objectionable in cases where healing depends on the growth of granulation tissue. Under its use the granulations become of a pale pink colour and loose and relaxed in texture, differing markedly from the bright vermilion red of those of iodoform and europhen."

Priestley Leech, M.D., F.R.C.S.

Acetanilide.—Morton[2] writes with enthusiasm of the use of this drug as a surgical dressing. He has used it dry, powdered on wounds and suppurating sores, as an ointment (a drachm to the ounce), and in the form of 10 per cent. gauze. The gauze was made after the

glycerine and soapsuds formula for iodoform gauze by the nurses at the Pennsylvania Hospital. Acetanilide dissolves in 5 volumes of alcohol, in 20 volumes of ether, and in 200 volumes of water; in liquid petrolatum is is soluble to the extent of 40 grains to the ounce.

In the large number of cases in which he has employed it, but twice have toxic effects been noticed, once in a child, fourteen months old, and once in a man, aged fifty-seven.

The powder does not, as a rule, stick to wounds or hold dressings fast, but if it should do so, alcohol causes instant release by dissolving the drug. It never irritates the skin or wounds, even when used beneath impervious protectives or antiseptic poultices. Upon extensive granulating surfaces and chronic ulcers, a slight burning is at first caused, but is rapidly succeeded by a sedative or anæsthetic effect. If a very large surface is exposed to the action of the undiluted drug, toxic symptoms promptly supervene in susceptible individuals. He has found all ordinary suppuration cease when it is used. Tuberculous lesions appear to be affected in a much better manner by acetanilide than by iodoform. It has an intense drying action on wounds.

Morton has used it with success in the following conditions: Abscess cavities (boils and carbuncles, after having been opened and dressed with it have almost ceased to suppurate), in fistulæ, suppurating joints, and in compound fractures: irritable and inflamed hæmorrhoids are relieved by a suppository of acetanilide; fistulas heal well after packing with the gauze. On chancroids the effect is marvellous; these troublesome sores heal rapidly under a crust of this agent. Syphilitic chancres and condylomata are much improved. He has also used it to paint suture lines after closing a wound in the form of a saturated alcoholic solution in place of iodoform in ether.

Should these results be confirmed, we shall have an agent which is superior to iodoform in at least two points, viz., freedom from smell, and cheapness.

Antiseptic Dusting Powder.—Pick[3] recommends the following antiseptic dusting powder in place of iodoform:—

℞	Bichloride of Mercury	gr. ½ to ℈	Tannic Acid	℥ij
	Boric Acid	℥j	Sugar of Milk	℥ij

The sublimate is first rubbed up thoroughly with the sugar of milk, and then the other ingredients are added.

Drainage by Iodoform Gauze.—Coe[4] asks whether iodoform gauze is a perfect drain. He believes this must be determined by the result of actual clinical observations. He says it has been assumed that the conditions under which tamponade of the uterine cavity is employed are the same when it is introduced into any other cavity

during a surgical operation, *e.g.*, after opening an appendiceal or perinephritic abscess. We lose sight of the fact that in the former case contractions are set up by the mere presence of the gauze as a foreign body. He has noticed several times that the drainage is imperfect. The gauze only acts as a drain with thin serous fluids. He avoids any reference to puerperal septic cases in which the conditions are different, since the os is already sufficiently dilated to allow the more or less free escape of fluid, sloughing material, etc., at the side of the gauze. He has also abandoned gauze drainage in cœliotomy except *per vaginam*. His own experience with gauze drainage through the abdominal wound has been the reverse of satisfactory. Of course, there is always a free discharge of fluid, but this is not the septic material which we wish to remove, for the latter almost invariably remains at the bottom of the wound. He comes to the conclusion that gauze should be used as a hæmostatic or else for the legitimate purpose of isolating septic surfaces from the general cavity of the abdomen and favouring the formation of adhesions, which will render the isolation permanent after removal of the tampon ; at the same time, he thinks it preferable to use a true drain in the shape of a glass tube along with the gauze. In one case, gauze even failed to act as a hæmostatic.

Dried Blood Serum as an Antiseptic Dressing.—Schleich[5] two years ago proposed this as an ideal dressing, and after an extended experience with sterilised blood serum and other albuminous bodies, he says he has at last found the ideal dressing. The serum powder is obtained from the blood of oxen by a process of desiccation ; it may be used pure or mixed with iodoform and dusted on the wound. Nuclein, he says, effects the separation of necrotic material lying in the wound ; it acts directly upon dead and dying tissue, but spares absolutely and entirely the healthy cells. Mixed with serum powder or serum paste in the proportion of 2 to 3 per cent., it produces a marked and immediate effect, so that the line of separation between the dead and living tissue sometimes appears as sharply marked as though made with a knife. Nuclein also acts upon gummatous and tubercular infiltrations.

The serum paste is composed of the powdered serum, water, oxide of zinc and wax mixed to the consistence of honey. Any of the common medicaments used in the treatment of skin disease can be added to this paste. Other preparations Schleich uses are the serum powder mixed with salicylic or boric acid, or with dermatol ; serum powder with 10 per cent. nuclein, serum paste with ichthyol, lysol, chrysarobin, etc., or with nuclein, 10 per cent., or with mercury 33⅓ per cent.

These applications have not been generally adopted, and equally good results can be obtained by other and more easily obtainable powders, etc.

Cellulose Wadding.—This is a newly introduced material for dressing wounds, prepared from pine wood. It is sent out in light porous sheets, about a quarter of an inch in thickness. It is easily compressible, and may be obtained sterilised or impregnated with antiseptic substances, *e.g.*, sal-alembroth. From its use in a limited number of suppurating wounds, on which wood wool in the form of pads had been previously used, the following conclusions have been drawn: Experimentally, it absorbs better than wood wool, but practically the absorptive power is about the same. The secretion from the wound diffuses rather better in cellulose wadding than in wood wool, but if too much localised pressure be used in the dressing, the secretion comes through quicker in the cellulose wadding than in wood wool. One advantage of cellulose is, that in removing the dressing it can be pulled away piece-meal. The sterilised cellulose wadding is rather cheaper than wood wool, but if impregnated with antiseptics it is dearer. Its use saves the time necessary for making pads, as is the case with wood wool.

Bichloride of Mercury Solutions.—Burcker[6] finds as a result of experimentation that ordinary water causes an immediate decomposition of bichloride of mercury, and that this decomposition steadily continues under the influence of light and air, but ceases when these are excluded. If the solutions are made with distilled water they undergo only slight decomposition, even when exposed to air and light.

Guillot examined the emergency packets made up for the army. Each of these contained sterile gauze impregnated with bichloride of mercury $\frac{1}{10}$th of 1 per cent. by weight. He found that a reduction took place, the mercury being transformed into an insoluble salt, so that in eighteen months no bichloride of mercury could be found.

Sulphur in Surgery.—For the remarkable use of this drug as a surgical dressing, see Mr. W. Arbuthnot Lane's article in the "Medical Annual" for 1895, p. 480.

Antiseptic Varnish.—This varnish has been recommended by M. Berliog, of Grenoble; he gives it the name of stérésol. Its use allows of permanent antisepticism upon the mucous surfaces, or on regions where it is impossible to fix dressings. The formula is:—

℞ Purified Gum Lac	grms. 270	Crystallised Carbolic Acid	grms. 100
Purified Benzoin	grms. 10	Essence of Cassia	grms. 6
Balsam of Tolu	grms. 10	Saccharin	grms. 6

Alcohol q.s. to make a litre (35 ounces) of liquid.

Compound Powder of Lucas-Champeonniere.—The odour of iodoform is masked, and it can be used with advantage for the disinfection of the pedicle (extra-peritoneal) in hysterectomy, in compound fractures, and in all wounds where there is a bad smell. Take equal parts of iodoform, powdered benzoin, powdered cinchona, and carbonate of magnesia, add sufficient essence of eucalyptus and mix.

Preparation of Catgut.—The purity of catgut is of the highest importance in surgical practice, but that this purity is not easily obtained is shown by the existence of so many methods of preparation. The following methods have all been recommended as efficacious :—

(1,) *Dr. Répin's Method.*[7]—The fat is first removed from the gut by means of ether or carbon bisulphide. The gut after this process is white, inodorous, swelling up rapidly in water, and very supple without being slippery. It is next dried completely, for the slightest trace of water is sufficient to lead to its disorganisation if the temperature goes above 100°C. This drying is done over sulphuric acid in a desiccator, or the gut is placed in a dry stove and the temperature is slowly raised to 110°C., and kept at this heat for an hour. It is then placed in absolute alcohol in sealed tubes, and these are placed in an autoclave, which is kept at a temperature of 120°C. for an hour. The alcohol must be absolute, for even 1 per cent. of water exercises a destructive action on the catgut. The objection to this method is that it requires special apparatus.

(2,) *The Ethereal Bichloride Process.*—This method was first used by Dr. Schapps, of Brooklyn,[8] but has been modified. The commercial catgut in coils is placed in a wide-mouthed bottle with well fitting glass stopper, and is completely immersed in stronger ether. This extracts the fat, etc., which is usually accomplished in forty-eight hours ; the gut, however, may be left in the ether for an unlimited time. When taken out it is wound on glass spools and placed in a bottle containing an ethereal solution of bichloride of mercury, 1 in 1,000, and there allowed to remain until used.

(3,) *Sterilisation by Boiling in Olive Oil.*—Dr. Eastman[9] has tried this method, and finds it satisfactory. The gut is wound on glass spools, and these are immersed in olive oil in a glass stoppered bottle, sealed ; and then the bottle is placed in a water bath, which is covered. The temperature is then raised to boiling point (212°F.), and kept there for three hours. The oil becomes turbid and cloudy, but clears up again after two or three days.

The efficacy of all these methods, according to the authors, has been proved by bacteriological tests, a full account of which will be found in the references.

REFERENCES.—[1] "Therapeutic Gazette," Sept., 1895; [2] "Polyclinic," Feb. 16, 1895, quoted in "Therap. Gaz.," June 15, 1895; [3] "Therap. Gaz.," Dec. 15, 1894; [4] "New York Polyclinic," Sep. 15, 1894, quoted in "Therap. Gaz.," Feb. 15, 1895; [5] "Therap. Gaz.," Jan. 1, 1895; [6] "Archives de Médecine et de Pharmacie Militaires," April, 1895, quoted in "Therap. Gaz.," June 15, 1895; [7] Répin, "L'Union Médicale," No. 64, June, 1895, and in "Arch. prov. de Chir.," t.iii, p. 377; [8] Schapp's "New York Med. Record," July 13, 1889; also Holden, "Annals of Surgery," May, 1894; Bissell, "Med. Record," Feb. 16, 1895, quoted by "Therap. Gaz.," June 15, 1895; [9] Eastman, "Annals of Surgery," July, 1894.

APOMORPHINE.

J. Boyer and L. Guinard[1] state that this drug produces two kinds of physiological phenomena, one being characterized by *excitation*, in which spasms, trismus, convulsions, agitation, vertigo, and hyperæsthesia are observed; the other, by *depression*, in which there occur syncope, collapse, hypothermia, general weakness, muscular paralysis, weakness and arrest of respiration, cardiac enfeeblement, and anæsthesia. These various phenomena are the result of the actions of two different kinds of drugs. The writers believe that the crystalline form of apomorphine causes exciting and convulsive phenomena, while the amorphous salts of the drug produce chiefly symptoms of stupor and paralysis. To obviate the production of diverse phenomena, and in order to obtain in the adult a simple and pure emetic effect, the white *crystalline hydrochlorate of apomorphine* should be employed in doses of from 3 to 5 milligrammes ($\frac{1}{20}$ to $\frac{1}{12}$ grain). The authors believe that, judging from the results of the principal researches so far published, and which they review in a careful and thorough manner, apomorphine is a medicament of real value. Its efficacy and the superiority of its action over other emetics have been established. The easy method of its administration by subcutaneous injections and the rapidity of its action make it an excellent therapeutic agent. If employed in a pure form, apomorphine will not cause serious after-effects.

REFERENCES.—[1] "Bull. Gén. de Thérap.," Aug. and Sept., 1894; Ref. "Therap. Gazette," Jan. 15, 1895.

ARGENTAMIN AND ARGONIN.

As substitutes for ordinary aqueous solutions of nitrate of silver, two organic compounds have been recently introduced, which are said to have a still greater microbicidal action and to be less irritating than the nitrate. Argentamin consists of a solution of 10 parts of phosphate of silver with an equal quantity of ethylene-diamine, $C_2H_4(NH_2)_2$, in a 100 parts of water. This does not throw down chloride of silver

when mixed with a solution of common salt, nor does it precipitate albumen. Clinically it is said by Dr. Schäffer, of Breslau, to act more energetically than a common nitrate of silver solution of the same strength, both destroying microbes of a pathogenic character better and also penetrating more deeply into the tissues. He found it especially valuable in the form of injections for **Gonorrhœa**, and Lang has used it with good results in a large number of cases of **Abscesses** of glands and of the connective tissue. Sometimes its irritant action is too great, but inconvenience from this may be avoided with due care. Another organic combination of silver has just been prepared by Dr. Röhmann and Dr. Liebrecht, with casein. This new preparation, which they style argonin, contains only one quarter the amount of silver that the nitrate does. It is soluble in water, the solution, being, however, opalescent and of a yellowish colour. It is said to be far less irritating to the tissues than argentamin. Like it, too, it forms no precipitate when common salt is added in solution, and according to Dr. R. Meyer, of Breslau, it has a remarkable microbicidal action, especially on the gonococcus.[1]

REFERENCE.—[1] "Lancet," July 6, 1895.

ARSENIC.

The hypodermic administration of arsenic has been strongly recommended by Dr. S. Rummo[1] in **Leukæmia** and **Pseudo-Leukæmia**, administered in the form of arsenite of soda. He uses a solution of arsenite of soda of the strength of 2 grains to the ounce and commences with a dose of $\frac{1}{27}$ of a grain. This dose is gradually increased until, after some fifty injections have been given, nearly ½ a grain—$\frac{45}{100}$—is reached. Of course, the patient must be very carefully watched during the whole of the treatment, which must at once be stopped on the appearance of any signs of poisoning. According to Dr. Rummo it is necessary to push the drug until signs of intolerance begin to manifest themselves. He thinks that, given in the way above recommended, it is by far the most satisfactory of all the numerous remedies proposed for leukæmia.

REFERENCE.—[1] "Lancet," 1895.

ASAPROL (in Children's Diseases).

Henry Dwight Chapin, M.D., New York.

Dr. Moncorvo[1] has made a contribution to the study of asaprol in the treatment of children's diseases. He has found that in healthy infants this drug does not have any appreciable influence upon temperature, pulse, or respiration, nor has it given rise to diarrhœa, cerebral manifestations, vertigo, or noises in the ears. It possesses

analgesic properties. In many cases it increases the quantity of urine, notably in cases of malarial fever. If albuminuria exists, it does not seem to increase the amount in the urine. A property which has not been hitherto ascribed to the drug is that of checking **Hæmorrhage,** of which seven instances are cited. The remedy is given in from 4 to 45 grains in the twenty-four hours, in sweetened water, to which is added syrup of tolu, gooseberries, or canella. For lotions or irrigations it is dissolved in water (1 to 5 to 100). For applications to the skin, nasal or pharyngeal mucous membrane, it can be used with vaseline, to which may be added lanolin. In malarial fever this remedy is without doubt efficacious, lowering the temperature and modifying more or less rapidly the type of the fever. It lessens the malaise, nervousness, and insomnia, and the hepatic or splenic congestion. It sometimes gives rise to a profuse perspiration, but less than that excited by such drugs as antipyrin. In acute tuberculosis it seems incapable of efficiently acting as an antipyretic. In broncho-pneumonia the cases were too few for the expression of a decided opinion. In **Whooping-Cough,** when used as an application (1 to 100 of water) several times daily to the region about the glottis, relief almost without exception followed.

REFERENCE.—[1] "Bull. Gen. de Therap." March 15 and 30, and April 15 and 30, 1895.

BROMALIN.

This is the name given by Merc to bromethylformine. It is represented by the formula $(CH_2)_6N_4C_2H_5Br$; its percentage content of Br is 32·13, that of KBr being 67·2 It has been brought forward as a substitute for the inorganic bromide, the object being to avoid the skin eruption, fœtor, and other unpleasant effects so often produced by the bromine salts commonly used. Laquer reports favourably of its use in **Epilepsy.** He found that 2 grammes had the effect of 1 gramme of bromide of potassium in subduing the fits. No effects on the skin or digestion were noticed.

CALCIUM.

That glycosuria[1] sometimes results from disease at the base of the brain and in the sequence of profound lesions of the pancreas has been definitely established, but this condition is wanting in many of the symptoms of diabetes mellitus. In conjunction with the presence of glucose in the urine, the most marked manifestations of true **Diabetes** relate to the nutrition, and it seems a justifiable inference that there exists a profound disturbance of the bodily metabolism. An interesting confirmation of this view is afforded by the report by

Grube[2] of a case of diabetes in a man, twenty-five years old, a brother of whom had died of diabetes, and who, upon the suggestion of an acquaintance, took daily a tea-spoonful of powdered egg-shells, with the result of a notable gain in weight and freedom from troublesome symptoms, although the amount of urine and the proportion of sugar were not diminished. Upon the basis of this observation a combination of calcium carbonate and calcium phosphate in the proportions found in egg-shells was administered in quantities of 60 grains daily, and the improvement was maintained.

REFERENCES.—[1] "New York Medical Abstract," July, 1895; [2] "Münchener Med. Woch., 1895, No. 21, p. 487.

CANTHARIDIN.

Dr. O. Liebrich[1] states that a remedy for **Tuberculosis** must be something other than that which destroys tubercle bacilli alone, but must have as well some effect upon the vital forces. After presenting the peculiar action of the drug and showing that medicinal doses, even if continued for two and a half years (case cited), will not give rise to any pathological changes in the kidneys, he points out its beneficial effects upon general symptoms. Cantharidin can be given internally as a sodium cantharidinate, or as the pure drug dissolved in tincture of orange-peel (1 to 5000), or by hypodermatic injection. From the results of his treatment he concludes that the dogma that **Lupus Vulgaris** cannot be cured without cicatricial tissue is untrue, and demonstrates that this drug has a curative action.

Petteruti[2] tried this method of treatment in **Phthisis,** in 1891, when it was advocated by Liebrich, but with unsatisfactory results. Recently, however, the author has seen three cases then treated by him. At that time large quantities of urobilin were found in the urine after the treatment. The appetite and nutrition were improved, and the expectoration became more abundant and fluid. There was no alteration in the temperature. Albuminuria was noted on only two occasions, and then the dose had exceeded 0·0002. The author gives details of the present condition of these three patients. Two of the cases are completely cured, and the third is so much better as to simulate a cure. An improvement lasting over three years cannot be looked upon as a temporary one, such as may sometimes be seen in phthisis.

REFERENCES.—[1] "Therap. Monat.", 1895, Heft 4, S. 167; "Amer. Journ. Med. Sci.," Aug., 1895; [2] "Il Policlinico," Nov. 1, 1894; "Brit. Med. Jour.", Dec. 8, 1894.

CARICA PAPAYA (Papaw Juice).

N. C. Mitra, M.A., M.B., Ranchi, Bengal.

As briefly as possible I propose to treat Papaw Juice, or the milky juice of *Carica Papaya*, with reference to its action and usage.

(1,) Its action on the stomach as a gastric sedative of great power is seen in the magical relief it gives in certain forms of **Gastric Irritation** and **Vomiting.**

I may cite a few cases in exemplification. A young man had an attack of acute diarrhœa, followed by fever. The diarrhœa got better, but there was such incessant vomiting, that, not to mention medicines, even a single teaspoonful of water could not be retained. All the gastric sedatives, as hydrocyanic acid, bismuth, soda, cerii oxalas, were tried one after the other, but the patient was no way improving. At last, papaw juice was tried. Three doses of 10 drops each, in a little water, repeated at intervals of two hours, stopped the vomiting.

The second case was that of a female in her eighth month of pregnancy. She had an attack of fever, with a temperature of 103° F. On the third day she had frequent vomiting. She could retain nothing, food or medicine. She was literally dying of starvation. Papaw milk was tried, and it had a wonderful effect. The vomiting ceased, and the patient was in a position to retain the diet prescribed.

These two cases prove the good effect which Papaw juice has in checking vomiting due to irritation in the stomach.

(2,) Its action as an *antacid* was seen in a patient who had an attack of **Hæmatemesis.** The peculiar feature of the case was that first he used to have acid eructation, and, immediately following, he would vomit blood. Sodii bicarb. had not the desired effect. Papaw juice tried in 10-drop doses acted as an antacid, and stopped further vomiting of blood.

(3,) The solvent action of the juice may best be illustrated by the following cases. The first was a case of **Nasal Polypus.** Under the advice of a medical man, papaw juice was applied over the visible hanging portion behind the soft palate. Only two such applications were made. A week later, the tumour appeared of a blackish colour, and the breath of the patient was very foul smelling. I prescribed some deodorant and antiseptic gargle. The tumour gradually changed its colour to black, and finally was much reduced in size. Ultimately, it was almost dropping down the throat when I detached it with a pair of forceps.

The second case was that of a man who had a *supernumerary finger* of the left hand, which was in the course of self-detachment.

To try the effect of the papaw juice I ordered an application to the line of separation. It had the desired effect, and helped separation of the finger.

REFERENCE.—" Medical Reporter," Jan. 18, 1894.

CHLORALOSE.

This drug has formed the subject of extensive study by E. Marandon de Montyel.[1] The following are the conclusions arrived at : —

(1,) Of all the actions of chloralose on the organism, that upon the nervous system is the most pronounced ; it is made manifest chiefly upon the brain and the spinal cord.

(2,) The action on the brain causes two kinds of effects—one of depression and one of excitability. The effect of depression is intense and lasting ; that of excitability is slight and fugacious.

(3,) The depressant action upon the brain presents two phases—sleep and sedation.

(4,) The sleep caused by chloralose comes on rapidly, and is exceptionally preceded by intoxication, heaviness of the head, stupor, or moderate cephalalgia, the latter being often quite marked, but not exaggerated ; at other times there appear lassitude, feebleness of the lower extremities, and various other troubles at different days and even in the same patient. The narcosis is followed by a feeling of well-being. This sleep, lasting several hours, is quite profound, easily disturbed, but calm from a psychical stand-point, no dreams being produced

(5,) The sedation, which may be considered as the first degree of the quieting action, is alone made manifest when the drug is acting on an excited medium. The sedation is more or less profound, sometimes simulating a condition of stupor.

(6,) The exciting action upon the brain is generally slight and fugacious, and sometimes imperceptible. On certain individuals, however, it may give rise to a crisis of delirium.

(7,) Chloralose has the peculiar property of causing a psychical blindness.

(8,) The drug is capable of producing dilatation of the pupil, a diminution of visual acuteness, accompanied sometimes with diplopia.

(9,) Upon sensation, the action of the drug is very feeble and sometimes irregular.

(10,) The influence of chloralose upon the reflexes is still more feeble, but these are generally excited above normal.

(11,) On motion, as upon the brain, the effects of chloralose are marked and appear also in two forms. There is one characterized by muscular hyperexcitability, the other effect consisting in muscular

relaxation; but, contrary to what happens in the brain, it is the exciting action which is quite marked, the sedative action being slight and fugacious.

(12,) The sedative action upon the muscles consists simply of a sense of weakness of the lower extremities.

(13,) The exciting action upon the muscular system is generally made manifest by muscular tremors, fibrillary contractions, isolated contraction of a muscle or of a group of muscles, contractions of all the muscles of one extremity or of a region of the body, sudden, jumping contractions of the muscles of the body, crises of general convulsions. These phenomena come under no law, nor do they follow a special order.

(14,) The muscular hyperexcitability produced by chloralose is lessened or attenuated by the sleep caused by the drug. It is during the narcosis that the diminution or the intensity of the phenomenon is observed, according to the degree of the narcosis.

(15,) Another variety of muscular hyperexcitability is noticed in individuals under the influence of chloralose, this consisting in the patient passing his hand over the head, face, and neck, as if suffering from some disease of the hair.

(16,) The double exciting and sedative actions upon the brain and the spinal cord are always made manifest in both organs in an opposing manner—that is, the sedative action on the brain is associated with the muscular hyperexcitability, the exciting action corresponding with the muscular relaxation.

(17,) In a calm subject chloralose is capable of producing a periodic respiration.

(18,) The state of the dynamometric force, of the temperature, of the number of respirations, of the arterial pressure, and of the pulse-rate, varies with the modifications in the cerebro-spinal system. During the psychical sedation accompanied with muscular hyperexcitability there are observed an increase of the dynamometric force, an increase of the temperature, an increase of the number of respirations, an increase of the arterial pressure, but a diminution of the pulse-rate. During the psychical excitability associated with muscular relaxation there are noticed a diminution of the dynamometric force, a diminution of the temperature, a diminution in the number of respirations, a fall of the arterial pressure, but an increase in the number of heart beats, these latter actions being less pronounced than the preceding ones, which always come on first. The diminution of the arterial pressure is really relative, for it remains higher than before the administration of the drug.

(19,) There is observed a curious respiratory rhythm following the convulsions of the respiratory muscles under the influence of the muscular excitability.

(20,) Chloralose is capable of steadying a very irregular pulse, the diminution of the number of heart-beats persisting even after awakening from the sleep caused by the drug.

(21,) Chloralose increases the appetite markedly ; exceptionally it causes gastric disturbances, eructations, thirst, vomiting ; but it is interesting to note that even in such cases the appetite is exaggerated.

(22,) Chloralose exercises a favourable action on nutrition.

(23,) The medicament is not a true diuretic, since it does not produce an increase in the amount of urine, secreted in the twenty-four hours, but it causes a relative polyuria immediately after its administration.

(24,) Chloralose exercises no action upon the organs of sense, except that of sight, nor on the vaso-motor system, the genital organs, or the intestines. It does not affect the secretions, except that of the kidneys, nor does it influence micturition.

(25,) The habit to the therapeutic action of chloralose, as a sedative and hypnotic, has been very easily established, but has also resisted the increase in the doses. Similarly, the previous as well as the consecutive phenomena are lessened and disappear with time. Unfortunately, the immunity to the muscular hyperexcitability is obtained after a long time, and then only in an imperfect manner.

(26,) *Pari passu* with a lessening of the sedative action of chloralose, due to habit, there is an increase in the exciting action, so much so that in time, far from producing a calming effect upon the patients, the drug seems to excite them more.

(27,) The action of chloralose is variable, and one, on prescribing the medicament, should be careful, because, while large doses are well borne by certain individuals, in some patients small amounts produce marked muscular symptoms and other unpleasant effects, like that of wakefulness.

(28,) As a hypnotic the drug is better borne in small than in large quantities.

(29,) The symptoms of wakefulness produced by the drug are seen in the treatment of **Epilepsy**, while the muscular hyperexcitability is more frequent and marked in hysteria and general paralysis, but not so pronounced in insanity. On the other hand, the hypnotic action of the drug is shown to be most efficacious in epilepsy, less so in **Senile Dementia**, and more in **Insanity** than in **General Paralysis** ; while, on the contrary, its sedative action is more pronounced in the latter than in the former affections.

(30,) The physiological action of chloralose is not modified by the various modes of administration.

(31,) The physiological action of the drug is marked, and its decreasing intensity immediately after its administration occurs in the following order: nervous system (brain and spinal cord), the circulation, and the urinary secretion. Upon the other functions the action is feeble or *nil*.

(32,) The frequency of the diverse physiological actions is not proportionate to their intensity nor to their gravity. It may be said that generally the favourable and the indifferent actions occur more frequently than the other actions.

(33,) It may also be said that generally, with the exception of the diminution of the pulse-rate, which sometimes persists until the following day after the ingestion of the medicament, the physiological action of chloralose lasts from six to seven hours.

(34,) The therapeutic effects of chloralose are more prompt to manifest themselves than those characterized by muscular hyperexcitability; the former, consisting of sedation and sleep, always precede the latter.

Dr. Leon C. Hoert[2] reports favourably on the use of chloralose for the treatment of the insane at the Hospice Saint Agatha. He found that a dose of 20 to 60 centigrammes produced as good therapeutic effects on the insane as in ordinary cases of insomnia. He considers it advantageous to give chloralose in a liquid vehicle after having first dissolved it in a little tepid water; sometimes the bitterness of the drug was disguised by giving it in sōlid food. It is well to make the patient at the same time take some simple infusion to facilitate the assimilation of the drug. The author in his experiments had chiefly in view the soothing of cerebral excitement, rather than the simple induction of sleep. He thinks his results sufficient to show that chloralose is not only an excellent hypnotic, but that as a sedative it is as efficacious as duboisin, without the drawbacks of that substance.

Touvenaint[3] records two cases of toxic symptoms produced by chloralose; in each case two doses of 20 centigrammes had been given.

The symptoms present were malaise, general tremor, incoherent speech, inability to move, nausea, difficulty of swallowing liquids, and deafness. These phenomena were almost immediately followed by dilatation of the pupils, coldness of the skin, extreme slowness of pulse, torpor, and involuntary passage of urine and fæces.

REFERENCES.—[1] "Bull. Gén. de Thérap.," July 30, Aug. 15 and 30, Sept. 15, 1894; Ref. "Therap. Gazette," Jan. 1895; [2] "Ann. de la Soc. Méd. Chir. de Liege," July, 1894; [3] "Jour. des Praticiens," May 19, 1894.

CONDURANGO.

A recent study of the action of condurango made by Dr. Guyenot[1] in the laboratory of Dr. Dujardin-Beaumetz, led him to believe that this drug exerts a toxic effect on the nervous system, but not until twenty-four hours after its injection into the body. This may possibly afford an explanation of the somewhat contradictory results reported by previous observers. It may be remarked that Gianuzzi and Buffalina ascribed to condurango tetanising powers. Lauder Brunton found that when the preparation employed is deprived by filtration of the coarse particles of the bark, no tetanic symptoms are produced, though when these are not removed the injection of the watery extract into the jugular vein causes an animal to die with opisthotonos. As to the therapeutic effects of condurango, the observations in the Hôpital Cochin fully confirm what has been stated by many observers as to its usefulness in **Ulcer** and **Cancer of the Stomach**, in relieving the gastralgia, catarrh, hæmatemesis, and vomiting, and in improving the appetite; but lend no support to the statements made by Drszewski, Burkman, Barth, and others, that it actually cures cancer of the pylorus. According to R. Wagner the effect of condurango on the digestive functions of dyspeptics and cancer patients is slight and inferior to that of nux vomica, while it is quite incapable of producing much effect on the gastric juice. According to Cheitsoff it is the pancreatic juice and the bile that are chiefly increased. Condurango may be administered in powder, decoction, tincture, or wine.

REFERENCES.—[1] "Nouveaux Remèdes," 5 and 6, 1895; "Lancet," April 20, 1895.

COPPER (Sulphate of).

This salt has lately been recommended as preferable to iron in the treatment of **Anæmia.** Cervells[1] gave it twice daily, in doses of $\frac{1}{3}$ to 1 grain, immediately after food.

REFERENCE.—[1] "Rundschau für Pharmacie."

CORNUTINE (Citrate of).

This salt is a soluble dark-brown powder, while the pure cornutine is an amorphous brown powder, very difficult to dissolve, and consequently little used.

According to the researches of Kobert, this drug is the active principle of ergot in its action upon the uterine tissues.

According to L. Lewitzky, cornutine, in doses of $\frac{5}{64}$ to $\frac{10}{64}$ grain, administered by the mouth, is one of the most certain drugs to arouse the uterine contractions, both during the confinement and afterwards in congestive and hæmorrhagic forms of **Metritis.**

Thompson has had good results by using the drug subcutaneously, in doses of $\frac{1}{32}$ to $\frac{1}{8}$ grain, in cases of **Metrorrhagia** and **Menorrhagia** following endometritis, and well as in metritis and in diseases of the ovaries.

P. Krohl believes cornutine to be indicated in all obstetrical operations, especially a short time before **Cæsarean Sections**, and in cases of **Atony of the Uterus** after artificial delivery, after the evacuation of embryos and macerated fœti, after rapid deliveries of a greatly distended uterus where there is atony, in subinvolution where the lochia continue blood-stained; finally, in **Puerperal Endometritis** in connection with vaginal and intra-uterine injections. Cornutine is contraindicated during gestation, and during the periods of dilatation and expulsion where there is feebleness of the contractions.

A. Meisel has had equally good results with cornutine in daily doses of $\frac{1}{8}$ grain, taken at three doses, in **Urethral Hæmorrhage**, and also **Vesical** and **Uterine.** According to this observer, the citrate of cornutine has produced cures in divers cases of **Paralytic Spermatorrhœa.** It acts in these cases by diminishing the medullary irritability, and particularly that of the genito-spinal centre. It acts also directly on the secretory organs, diminishing the secretion. In the majority of cases it sufficed to give this medicine for six, eight, or fourteen days, to suppress completely the flow of seminal fluid.

It may be given in the following manner:—

℞ Cornutine, pure gr. $\frac{1}{2}$ | Aq.
Argil. gr. xlv | Glyc. āā q.s.

M Ft. Pil. No. xx. Sig.—Two pills to be taken three times a day (for obstetrics).

℞ Cornutine citrat. gr. iiss | Mucil. gum. Trag. q.s.
Argil ℥j ℈ij |

M. Ft. Pil. No. xxx. Sig.—One pill to be taken twice daily for) spermatorrhœa).

REFERENCES.—"La Méd. Mod.," March 23, 1895; "Therap. Gaz.," June 15, 1895.

CUPREINE.

This homologue of quinine has been experimented upon by E. Gromaux.[1] He finds that when given by hypodermic injection it produces in dogs, rabbits, and guinea-pigs a local anæsthesia at the point of injection, this effect lasting for several days, but no tremors or any other convulsive phenomena were observed. For guinea-pigs, the fatal dose varied from 25 to 30 grammes (385 to 462 grains), or double that of quinine.

He used the chlorhydrate of cupreine in simple **Malarial Fever**, in doses of from ·50 to 1 gramme (7½ to 15 grains); but its antiperiodic action was weak, as were also its hypothermic effects. It caused no vertigo nor buzzing in the ears.

REFERENCE.—[1] "La Nouveaux Remèdes," July 8, 1894.

DEPILATORIES. *Norman Walker, M.D., Ed.*

While electrolysis is the only thorough method, it is not always practicable. Annequein[1] has studied the action of hydrosulphate of calcium and of the proto-sulphide of calcium. The former made into a paste with water can cause the softening and detachment of a finger nail in about an hour, of a toe nail in about two hours. The barium salt is also made into a paste with water and applied to the part. In five or six minutes all the hairs are destroyed. It is more rapid than the other, is odourless and cheap. The smarting is only slight (this is not our experience.—N.W.). The proto-sulphide is the only salt of barium which has the depilatory action. The addition of oxide of zinc makes it less painful, but the action is then much slower.

A paste of zinc oxide, starch, and barium sulphide acts in two to four minutes, without pain (Unna).

REFERENCE. —[1] "Arch. de Med. et de Pharm. Militaires," Oct., 1894.

DUBOISIN.

P. S. Skuridin[1] used hypodermic injections of duboisin in twenty-one cases of sleeplessness in the insane, the dose varying from $\frac{1}{150}$ to $\frac{1}{75}$ grain, and the grand total of injections amounting to three hundred and sixty. In one hundred and fifty-three (42 per cent.) cases the duration of induced sleep exceeded six hours, while in one hundred and twenty-six (35 per cent.) it oscillated between four and six hours, and in sixty-two (18 per cent.) was under four hours; in nineteen (5 per cent.) the drug failed altogether. The writer comes to the following conclusions:—

(1,) Duboisin will occupy a prominent place among hypnotics for the insane.

(2,) The best results may be expected in **Epilepsy, Periodical Insanity,** and **Acute Mania** and **Mental Confusion.**

(3,) The hypnotic effect is a secondary phenomenon, developing consecutively to the subsidence of a motor or muscular excitement; hence the drug proves most useful in **Insomnia** caused by intense motor excitation. In sleeplessness depending upon illusions, hallucinations, or organic brain-disease, but unaccompanied by distinct motor disturbances, the remedy remains inefficacious.

(4,) The drug is free from accessory ill effects.

The following toxic symptoms after duboisin are recorded by E. Marandon de Montyel[2]:—

"The toxic symptoms varied in different subjects. There was a peculiar quasi-drunken condition, with giddiness, vomiting, tingling of the skin, psychic and motor excitement, hallucinations, and delirium, sometimes followed by a leaden sleep. Prolonged attacks of tonic and clonic convulsions were also observed. The patients were very pale, although their skin was burning hot to the touch. There was also abundant sweating, sometimes limited to one-half of the body, and profuse green diarrhœa, polyuria, and frequent micturition. In one case there was alarming failure of the heart's action, which, however, yielded to stimulation. The pupils were always dilated to the fullest extent, and this symptom was accompanied by lachrymation and visual disturbances due to paralysis of accomodation. In all the cases there was extreme dryness of the tongue and of the whole buccal cavity, with intense thirst. All the patients rapidly recovered. These cases show that, whereas the therapeutic effects of duboisin consist in a sedative and hypnotic action, generally accompanied by diminution of the secretions, the toxic effects manifest themselves in symptoms of motor and psychic excitement and convulsions, with increase in the secretions, except those of the mouth. Marandon de Montyel concludes that as the toxic symptoms in these cases disappeared rapidly without leaving any trace, the use of duboisin in doses of 1 to 3, and even 4 milligrammes is in nowise dangerous to life, even when the drug causes phenomena of intoxication. With the view of avoiding such accidents he thinks it would be well, as a general rule, to use only the neutral crystallized sulphate, and not extracts of the drug."

REFERENCES.—[1] "Vratch," 1894, No. 21; "Brit. Med. Journ.," Oct. 20, 1894; [2] "Sem. Méd." March 6, 1895; "Brit. Med. Journ.," March 23, 1895.

ELECTRICITY. *Græme M. Hammond, M.D., New York.*

Apostoli and Berlioz[1], on March 18, 1895, presented a paper on the general therapeutic effect of the alternative electric current of high frequency and of high tension to the Academy of Sciences, of Paris. Apostoli now, after longer and riper experience, desires to present a summary of his general conclusions:—

(1,) According to D'Arsouval's discoveries, alternating currents of high frequency and high tension, exert a powerful action upon all living bodies submitted to their inductive influence.

(2,) The best method of applying these induced currents is to place

the patient, free from all contact with electrodes, in the circuit of a large solenoïd traversed by these currents. The patient thus being completely insulated, the currents, which circulate in his body by *auto-conduction*, have their origin in his tissues. The body plays the *rôle* of a closed induced circuit.

(3,) By this method the physiological discoveries of D'Arsouval are confirmed, and the powerful influence of these currents upon the *vaso-motor* system could be readily demonstrated, although they produce absolutely no sensation, and although they have no apparent effect upon the motor or sensory nerves.

These currents have nevertheless, a powerful action upon all the nutritive functions; as has been verified by Berlioz's numerous analyses of the urinary excreta.

(4,) The general therapeutic applications to be deduced from this physiological action are confirmed by clinical observation.

Apostoli has now treated more than a hundred patients by this method. The greater number of these patients have been greatly benefited by this new treatment, which has been employed to the exclusion of all other forms of medication, dietetic, or otherwise.

(5,) These currents exert, in the majority of cases, a most powerful and generally beneficial action upon diseases due to diminution of nutrition. They act by accelerating organic exchanges and combustion. This is proved by analysis of the urine made by Berlioz, of which the following is a brief *résumé* :—

The quantity becomes more natural, and the products of organic waste are better eliminated.

The *increased circulation* is shown by the diminution of uric acid, while the percentage of urea is generally increased. The relative proportion of these two substances changes under treatment, so as to reach in general the figure of 1 to 40. The elimination of the mineral products is also changed, but in a manner less marked.

(6,) When daily *séances* are given, each *séance* lasting fifteen minutes, we may generally observe in patients submitted to the influence of these currents the following modifications in their general condition. We mention them in the order of their occurrence: Return of sleep; increase of strength and vital energy; increase of gaiety, of power and ability to walk; improvement of appetite, etc. In short, *general progressive improvement.*

This general improvement often manifests itself after the first *séance*, before any local influence is apparent, and before any change has occurred in the urinary secretions.

(7,) Local pain and trophic changes are often more slowly affected by these currents, and at times they are entirely refractory for a longer or shorter period.

In such cases the same currents must be applied locally by contact with the electrodes.

(8,) The diseases which have appeared incurable by this treatment are those not associated with well defined organic changes, such as *hysteria* and certain forms of *neurasthenia.*

Apostoli has also observed that certain *localized neuralgias* are refractory to this form of current. They require more direct local applications.

(9,) The diseases which have derived most benefit from this therapeutic agent, belong to the *arthritic class—rheumatism* and *gout.*

(10,) In certain *diabetic* subjects the sugar disappeared altogether from the urine under the influence of these currents, while in others, there has been no such change, notwithstanding the manifest and constant improvement in the general condition. Whether this difference was due to the imperfection of the electric apparatus, or to the manner of its application, could not be ascertained. It is hoped, however, that further experience will soon determine this question, although the fact that diabetes has many different causes, may in itself explain the difference in the results obtained by this treatment.

(11,) In conclusion, the currents of high frequency and of high tension, introduced into electro-therapeutics by D'Arsouval, greatly increase the field of action of medical electricity ; they furnish general medicine at least with a new and valuable means of treatment, capable more or less of modifying the processes of nutrition.

REFERENCE.—[1]Report, "Brit. Med. Assoc.," 1895.

Electricity in Skin Diseases. *Norman Walker, M.D., Ed.*

Oudin[1] has tried the effect of currents of great frequency and high tension, without any other method of treatment, with encouraging results. In eczema, psoriasis, pruritus, and alopecia areata, the effects were not only rapid but permanent. The currents are absolutely harmless, and are well borne by the most sensitive patients.

Monell in the "Medical Record" lauds the virtues of static electricity. A severe case of furunculosis was completely cured in a couple of weeks. It is however in eczema that he was most delighted with his results. The results, as detailed, are marvellous enough, were we not so familiar with the wonderful cures which the gentlemen who take up some special method of treatment are in the habit of reporting as their results. If the method can do one quarter of what Dr. Monell claims for it, it is well worth trying.

Electrolysis.—In the "Medical News" Sorenson draws the following conclusions: (1,) Do not begin with too strong a current; (2,) Apply it for a sufficient length of time; (3,) Always apply the negative pole to the part it is intended to destroy; (4,) Do not close the circuit till the needle is inserted; (5,) Always test the strength of the current before beginning.

REFERENCE.—[1] "Annal de Dermat. et de Syph.," Sept., 1894.

EPHEDRA VULGARIS.

M. X. N. Vesternik[1] reports on this drug as follows:—

(1,) Ephedra vulgaris is not an indifferent drug, although it is not very harmful.

(2,) The infusion has a slight sudorific and diuretic action.

(3,) In small doses it stimulates intestinal peristalsis.

(4,) Its antirheumatic action is doubtful.

(5,) Its cardiac action is not worth mentioning.

(6,) The claims made for it have been greatly exaggerated.

REFERENCE.—[1] "La Méd. Mod.," March 16, 1895.

EXALGIN.

The value of this substance as an analgesic is put forward in a recent article.[1] It claims that it is the remedy *par excellence* in the treatment of **Neuralgia**, whether this disease be the result of simple nerve irritation, or whether it be due to a true neuritis. For example, a neuralgia dependent on dental caries, or due to cold; a sciatic neuralgia; an intercostal neuralgia; a sciatic neuralgia due to a true neuritis; neuralgia due to rheumatism, chlorosis, syphilis, cancer, or ataxia; in all and in each case exalgin produces its curative effects. Again, in many cases of visceral pains, in cardialgias, gastralgias, ovarialgias, in menstrual or nephritic colics, etc., exalgin often cures, and generally produces a marked sedation. In one word, exalgin may be considered as the prince of analgesic medicaments, its employment being indicated in all cases where pain is a prominent symptom. Given in solution, or in the form of compressed tablets, exalgin never causes untoward effects, these following only an impure preparation.

M. Weber[2] reports an instance where ½-ounce of this remedy in 3 ounces of water had been swallowed. One and one-quarter hours after there were restlessness, rotatory vertigo, blunted sensibility, contractures, and threatening asphyxia. Then followed convulsive crises with cyanosis. Anuria persisted for twenty-four hours, then emission of urine containing hæmatin, biliary pigment, and albumin. Improvement commenced, but there were observed slight delirium

and anorexia, with slight jaundice and subconjunctival ecchymosis. The treatment consisted of injections of caffeine, electrization of the phrenic, administration of an emeto-cathartic, and blood-letting.

REFERENCES.—[1] "La Médicine Moderne," Oct. 20, 1894; [2] "Journal des Praticiens," 1894, No. 34, p. 416.

FERRIPYRIN.

This is a combination of iron perchloride and antipyrin. It is an orange-coloured readily soluble powder, recommended both as a hæmostatic and a local astringent. Hedderich has already made investigations as to its practical usefulness, obtaining very good results, and finding it different from the more generally used perchloride of iron in being absolutely non-irritating and non-destructive to tissues. When applied to the nasal mucous membrane it also proved to be a mild anæsthetic. A solution, 18 to 20 per cent. in strength, was usually employed, but the powder itself could also be applied. Its use in **Gonorrhœa**, and internally in cases of **Hæmatemesis**, is also suggested by Witkowsky.[1]

REFERENCE.—[1] "Therap. Monatsh.," Feb., 1895.

GALLICINE.

Gallicine is the methylic ether of gallic acid. It is a white crystalline substance, soluble in hot water, warm spirit, and ether. Chemically it presents certain analogies with resorcin and with pyrogallol, and as these substances are of use in catarrhal and some cutaneous affections, it occurred to Dr. Mellinger, assistant to the Basle Professor of Ophthalmology, Dr. Schiess, to try the effect of gallicine in catarrhal conditions of the conjunctiva, and in eczema of the eyelids, and some other affections of the eye. The powdered substance, which is very light, is dusted into the eye, or applied to the cutaneous surface by means of a brush, according to circumstances, in the same manner as calomel is employed. The application, which is made once or twice a day, is usually followed by a smarting sensation, which, however, soon passes off, but can be relieved by cold water compresses, or entirely prevented by the previous use of cocaine. From an experience of some two hundred cases Dr. Mellinger warmly recommends this remedy as superior in a good many eye affections to dermatol and gallinol. **Conjunctivitis**, whether catarrhal, suppurative, or phlyctenular, yielded to the gallicine treatment in a few days, and **Superficial Keratitis**, which had resisted the application of nitrate of silver, acetate of lead, compresses saturated with lead lotion, white precipitate ointment, atropine drops, etc., rapidly improved under gallicine. In **Phlyctenular Affections** gallicine has the advantage of being suitable, even when

there is hyper-secretion, which, according to Dr. Mellinger, is a contraindication to the employment of calomel.

REFERENCE.—"Lancet," July 6, 1895.

GUAIACOL.

In addition to the decided antipyretic effects produced by guaiacol when applied to the skin, its value as a means of relieving pain is gradually becoming recognized. J. M. Anders mentions that its analgesic effects may be observed in the treatment of **Gastralgia**, when it decidedly allays the irritability of the nerve terminations.

In such cases he prescribes as follows :—

℞ Guaiacoli Glycerinæ	āā ʒj	Aq. Menth. Vir.	q.s. ad ʒiiss

M. Sig.—One drachm every four hours, as directed.

The author states that, acting on the suggestion of Ferrard, who has used this drug in **Sciatica** and **Intercostal Neuralgias** (painting it over the course of the nerve, mixed with an equal part of glycerine), he used it similarly in eight cases. Of these, there were supraorbital neuralgia, three ; sciatica, two ; intercostal neuralgia, two ; and neuralgia of the anterior crural, one. In the case of neuralgia of the anterior crural, applications of guaiacol to the skin, over the course of the nerve, cause some degree of lessening of pain. Subsequently, the drug was used hypodermically, the needle being introduced immediately over the affected nerve. The dose was 2 minims diluted with 10 minims of chloroform. The effect of this combination was striking. After the second injection, which was made twenty-four hours after the first, pain was completely relieved, and it did not recur.

After recording several cases treated, he draws the following conclusions :—

(1,) Guaiacol is an efficient local sedative, as shown by its analgesic power when employed in painful affections.

(2,) It is more potent when administered hypodermically than when applied to the skin surface.

(3,) It has not, in practically afebrile conditions, produced any noticeable lowering of temperature or other unpleasant effects, in his experience.

(4,) When employed in febrile affections, it may cause objectionable effects, such as rigors, followed by high temperature.

(5,) Guaiacol seems to be powerless to control inflammatory processes, particularly when acute in character.

REFERENCE.—"Therap. Gazette," March, 1895.

HYPNOTICS.

Many cases have recently come under our notice where the new hypnotic remedies, of the sulphonal class, have been used continuously by patients under the impression conveyed to them by medical practitioners that the drugs are of an absolutely harmless character. There can be no doubt that an impression of this kind largely exists in the public mind, and that such drugs are purchased direct from the druggist or the "stores," and used as a common household remedy. It is also true that this idea has been promoted by the writings of physicians, and widely disseminated not only by means of medical journals but also by the circulars issued by the proprietors of these agents. We do not suggest that these articles are untruthful, nor that they do not furnish a record of actual experience obtained, but we do affirm very positively that no properly educated physician has a right to affirm that a drug is absolutely harmless, because it may be given in a medicinal dose without producing *immediate* poisonous effects.

A drug which forces sleep by over-powering the functions of the brain, can only accomplish its result by an exhaustion of the chief nerve centres, and if this process of exhaustion is continued it must produce a very serious impairment of the functions of the brain.

As we are well aware, the nervous system will adapt itself to conditions of exhaustion for a longer period than any other organ in the body, but when it at last gives out, the process of repair is very slow, and a point may be reached when it may become impossible.

We must remember also that the class of patients to whom these hypnotics are most frequently administered, are generally suffering from some form of nerve exhaustion, which causes the sleeplessness for which it is given. The further exhaustion caused by the regular use of hypnotics does not only show itself in some disorder, such as vertigo or ataxic gait, but also in impairment of the mental and moral faculties.

In one case when a lady of amicable disposition suffered from sleeplessness as a result of nursing a sick husband, various hypnotics were given, not continuously, but at frequent intervals. Gradually she became irascible in temperament, fretful and despondent. Her friends stated that her whole disposition was changed, and from being a rapid calculator she found herself unable to add up the figures of her housekeeping book. This patient was on the brink of insanity when she came under the writer's notice. The only treatment indicated and required was to give food every two hours, while the patient was awake, night and day, the food at night consisting of soup or beef juice

in small quantities. The absence of the hypnotics was not felt after the first two nights, when the patient began to sleep fairly well without any medicinal aid; and before the end of the week, with absolute mental rest, her sleeping powers were excellent. This patient will probably recover her full mental powers, but it may be twelve months before the effects of this pernicious dosing have left her. Every dose of a hypnotic drug does some violence to the nervous system and leaves the effect of shock, whether it be immediately noticeable or not.

It is for the physician to decide whether the period of rest afforded by the occasional use of such drugs will compensate for the inevitable injury done. That these pernicious, because insidious drugs should be freely obtainable by the public, and used not only in ignorance of their dangers, but in the belief fostered by the reports of educated physicians that they are harmless, is not very creditable to those who are responsible for the public health.

In connection with this subject a valuable article has recently been contributed by Bresslauer and Joachim[1] comparing the value of sulphonal, trional and tetronal. Their conclusions are as follow :—

(i,)—Sulphonal has certain disadvantages. Its action is slow, owing to its being nearly insoluble, and sleepiness rather than sleep is produced. After long use : (1,) vomiting and constipation ; (2,) ataxia of the lower limbs with paralysis and muscular spasms ; (3,) anuria, ischuria, and hæmatoporphyrinuria have been observed, some of these cases ending fatally. The authors have had no bad results since they made a rule never to give it for more than three days in succession, in doses not exceeding 2 g. *pro die*, and to regulate the bowels and kidneys. It should be exhibited always in hot water (tea, etc.) in as good solution as possible.

(ii,)—Trional acts excellently in **Neurasthenic Insomnia, Chronic** and **Periodic Mania,** etc. The authors (contrary to the experience of many) have had good results also in **Melancholia,** and **Hallucinations** accompanied by violence, even 0·5 g. having a sedative effect. Experiments have shown that animals can be poisoned in exactly the same way as with sulphonal, and in man up till now four cases of poisoning (two fatal) have been recorded. Its action is cumulative and delayed from fifteen minutes to three or more hours after administration, but this is not nearly so marked as with sulphonal. Sleepiness continues in some cases during the next day and even night. Symptoms of poisoning were observed in a number of cases after continued administration, namely, dulness, giddiness, headache, anorexia,

obstinate constipation, ataxia of the lower limbs, and sometimes oliguria or even strangury. Noises in the ears, cutaneous hyperæsthesia (Friedländer), any marked action on the heart and respiration or epigastric pain (Koppers, Römert) were never observed. Such transitional cases lead up to the more marked ones of chronic poisoning, where the symptoms are very like those of sulphonal poisoning, ending in hæmatoporphyrinuria, hyperacidity of the urine, and death. Reinecke recently reported a case in which 40 g., spread over three months, caused severe poisoning. The fact of this idiosyncrasy makes the following rules necessary: (1,) Trional must never be given continuously in larger doses than 1 to 2 g., and always in a large quantity of warm fluid—soup, tea, etc.—in which it is readily soluble; (2,) After administration for four to six consecutive days, breaks of several days must be made; (3,) The patient should take some natural alkaline mineral water during the course; (4,) Constipation must be corrected; (5,) If hæmatoporphyrinuria be present, the drug must be discontinued at once, diuresis and free evacuation of the bowels obtained, and the blood neutralised with 4 to 6 g. sodii bicarb. *pro die.* If these precautions be taken, trional is one of the best and relatively safest hypnotics.

(iii,)—Tetronal has all the disadvantages of sulphonal without its power, its action being more sedative than hypnotic. If given, all the precautions necessary for sulphonal and trional must be taken.

REFERENCES.—[1] "Centralblatt. f. d. Gesammte Therapie," Aug., 1895; "Brit. Med. Journ.," Sept. 21, 1895.

ICHTHYOL.

The use of this substance has lately been extended to the treatment of **Tuberculosis**. Dr. L. Guido Scarfa,[1] states that it has not only a reducing action upon tissues, rendering them anæmic, contracting the blood-vessels, antiphlogistic and even analgesic, but also as an antiseptic it has a direct influence upon pathogenic bacteria, especially upon the streptococcus and diphtheria bacillus, to a less degree upon the bacillus pyocyaneus, typhus, cholera, and malignant pustule bacilli. It is also a conservator of tissue-waste, and can be borne in large doses by the alimentary tract. From the one hundred and fifty cases under observation, in which the drug was used in solution (1 to 3) in water, glycerine, rectified alcohol, or oil of peppermint, the last being used to conceal the disagreeable odour, the results were encouraging. Of this mixture from 20 to 200 drops were taken each day well diluted in water, 10 to 15 ounces. The patients soon become accustomed to the disagreeable odour and taste, and no untoward symptoms have been noticed. It seems to be a valuable

remedy which may replace guaiacol, without, however, possessing the disadvantages of the latter.

REFERENCES.—[1] "Therap. Woch.," 1895, No. 17, S. 342; "Amer. Journ. of Med. Science," April, 1895.

IODVASAGEN.

Leistika[1] considers that this substance should completely replace tincture of iodine in dermatological practice. It never causes dermatitis, and the combination of the iodine in iodvasagen is closer; the pain quickly vanishes and the application is more penetrating.

The results of treatment do not appear to be so satisfactory as to support this recommendation. Fifteen cases of **Gonorrhœal Epididymitis** were treated apparently with results about the same as obtained by the use of support and counter-irritation. Ten cases of beginning **Inguinal Lymphadenitis**, due to chancroid, yielded to the applications in from one to four weeks. None of these suppurated. No benefit was obtained in four cases of purulent inguinal lymphadenitis. Twelve cases of cervical lymphadenitis gave unsatisfactory results, though the six which were tubercular in nature showed diminution in size.

Five cases of **Syphilitic Pharyngitis** yielded quickly to pencilling.

REFERENCE.—[1] "Monat. für Pract. Dermatol.," No. 10, 1894.

LYSIDIN.

This agent is said to have a greater solvent power on uric acid than piperazin. Grawitz[1] employs it in doses of 1 to 5 grains in the day, with occasional intermission. It has not been found to increase the excretion of uric acid, but both the pains of gout have been relieved and the tophi diminished in size.

REFERENCE.—[1] "Deut. med. Woch.," Oct., 1894.

MALAKA.

This is said to be a salicyliden-para-phenetidine, which, in the presence of dilute mineral acids, is decomposed into salicylic aldehyde and para-phenetidin. This decomposition taking place in the stomach, the salicylic aldehyde, on being absorbed, is, according to Schmiedeberg, oxidized to salicylic acid in the tissue of the body, and can be recognized in the urine.

Abernethy[1] records a case of **Acute Rheumatism** in which it was employed with success at a late period of the attack. He has also used it in other forms of **Pyrexia,** and in **Croupous Pneumonia,** with satisfactory results.

REFERENCE.—[1] "Edin. Med. Journ.," Feb., 1895.

MERCURY.

The use of mercury in **Heart Disease** is not new, but it is too apt to be forgotten in these days of "New cardiac tonics." An article, therefore, by Dr. Wm. Murray, of Newcastle,[1] in which he recites a case of a man who suffered from valvular disease of the heart, with enormous dilatation and hypertrophy, who was kept alive for ten years by means of full doses of blue-pill, is of interest.

Dr. Murray calculates that the patient took 20,000 grains of blue-pill during the course of treatment, but he was never salivated, nor purged, nor had any symptoms due to the mercury used so freely.

Dr. Murray says: "Repeated observation has convinced me that mercury possesses a value far beyond the supposed alterative nature of its action—not that it fails to relieve congested vessels by drainage or osmosis, for doubtless this lays the foundation of its further action on the heart itself, and it would fail to relieve the heart did it not eliminate biliary and other effete matter from the blood and tissues of the liver and portal system, for instance; but when due allowance has been made for these primary effects, there remains strong evidence that it tells upon the heart itself. Its special benefits are exercised in cases of dilated and hypertrophied heart. By means of it the "thready," weak, rapid, and irregular pulse is made full, soft, regular, and slow, with manifest relief of such symptoms as dyspnœa, pectoral weight and tightness, and sensations of faintness. The "angina sine dolore" is often marvellously relieved and removed by 2 or 3 grains of blue pill three times a day, and the severe forms of "angina pectoris" not unfrequently disappear under its influence. While the nitrites, nitro-glycerine, etc., afford temporary relief, this remedy is much more permanent in its effects. Nor need I say that to give digitalis a fair chance it is absolutely necessary to pave its way by preliminary doses of mercury, and to foster its action by repeated doses. Many of the cases where digitalis, etc., fail, or seem to fail, by supposed accumulation, depend on this, that we are giving the digitalis without the blue pill or calomel, and it often falls to the lot of the consultant to make a great hit by inserting the mercurial into the previous treatment. Much more true is this of iron and digitalis combined. We see a patient with engorged vessels and labouring heart taking iron and digitalis much to the detriment and not to the benefit of the case—each dose is but adding fuel to the fire—energizing the heart in its futile attempts to drive the blood through the engorged vascular system, and thus exhausting the organ in its hopeless struggle. We change all this by frequently repeated doses of mercury; we drain the portal system, we exosmose the water from the general vascular

system, we suck up dropsical accumulations, and by pushing the drug we get hold of the heart itself, and produce the slow, soft, regular, and effectual pulse, giving the digitalis or strophanthus a fair chance to come in as cardiac tonics; and at last we complete the circle by arriving at the point whence we departed with the patient in a very different condition, and we can give the iron and digitalis now with impunity—nay, with immense benefit."

It may be remembered in connection with Dr. Murray's very practical paper that mercury has a powerful diuretic action, which may be partly accounted for by its action as a cardiac tonic in certain conditions of that organ.

REFERENCE.—[1] "Lancet," Sept. 28, 1895.

MILK. *Henry Dwight Chapin, M.D., New York.*

Dr. Bendix[1] discusses the digestibility of sterilized and unsterilized milk. With a child in good health there is no difference in the assimilation of nitrogen or fat in favour of pasteurized over sterilized milk, whence it follows that sterilized milk is as well digested and as completely absorbed as non-sterilized milk. But a child whose digestion is weakened by diminished secretion of bile, assimilation is diminished, as compared with the normal, in the proportion of 0·9 to 2 per cent. for nitrogen, and 2·4 to 3·8 per cent. for fat; but it is diminished equally for the two varieties of milk. The taste and odour of milk remain good after sterilization, though differing decidedly from that of raw milk; but it is taken as readily as pasteurized milk.

Dr. Koplik[2] has placed infants upon raw, boiled, pasteurized, sterilized milk, and the breast, and also the breast combined with sterilized milk. In all cases a study of the writer's results will show that the amount of nitrogen excreted compatible with a condition of perfect health and increase of weight varied widely—from 1·7 per cent. to 4·3 per cent.; and that the total nitrogen of one observed week varied—in one case favouring sterilized, in another the pasteurized by a small fraction of 1 per cent. The amount of nitrogen excreted with the fæces and the total loss of nitrogen to the economy is an index of the assimilation of the albuminous portion of the dietary, for in spite of wide variations we see not only the atrophic, but the apparently healthy infant increase in weight and thrive.

The casein of the milk is assimilated much the same in infants upon pasteurized, sterilized, or boiled milk, but assimilated fully as casein of cow's milk. The casein of mother's milk, as proved by the experiments of Wroblewski, is an entirely different body from the casein of cow's milk. Its casein has a nuclein and paranucleins

which are readily assimilable ; whereas in the cow's milk the nucleins are partly insoluble and indigestible. Thus we see clearly how another important element has crept into the problems of infant feeding independent of any mechanical manipulations to which the food of the infant has been subjected. This may explain many things not ready of solution by the mechanical methods of chemical analysis. The delicate albuminoids and animal bodies rich in phosphorus (nucleins and paranucleins) present in mother's milk can not be compared with those of cow's milk. Nor can we lay the failures of artificial feeding of the infant entirely to the door of the mode of preparing the food, as has been attempted by the American and German writers.

Prof. Leeds[3] gives some interesting data as to the milk of different breeds of cows. He says : "The Holsteins give the lowest solids, then the Holderness, Ayrshire, Devon, Guernsey, and highest, the Jerseys. The order for fat is Holsteins, the lowest, then Holderness, Ayrshire, Devon, Guernsey, and Jerseys. But in total production of milk, the Holsteins lead, with a daily yield of 22·65 pounds, Ayrshire next, then Guernsey, Jersey, Holderness, and the Devons the lowest, with 12·65 pounds.

Dr. Gartner[4] advises freshly separated diluted cow's cream as an infant's food. Good cow's milk is treated with an equal quantity of water and placed in a centrifugal "separator." The fluid which runs from the "cream tap" contains all the cream of the original milk except about ·1 or ·2 per cent., half the proteids, and half the milk-sugar. This gives a very close imitation of human milk, with the exception that the milk-sugar is much too low. Escherich gives the following comparative table of analyses :—

	Casein.	Fat.	Sugar.
Gartner's "fat milk"	1·76	3·0	2·4
Human milk	1·82	3·94	6·23
Diluted cow's milk.....	1·76	1·81	2·4

REFERENCES.—[1] "Jahrb. f. Kinderheilkunde," Bd. xxxviii., S. 393 ; [2] "New York Med. Journ.," April 13, 1895 ; [3] "Report of Dairy Commissioner of state of New Jersey for 1894" ; [4] "Allg. Wien. Med. Zeit.," Oct. 13, 1894.

NAPHTHOL BETA.

Max Baatz[1] records two cases of nephritis caused by this agent, in one of which the patient died. He warns the profession against the use of this agent where other remedies are available.

REFERENCE.—[1] "Centralblatt. f. inn. Med.," Sept., 1894.

NEURODIN.

A series of experiments with this analgesic are recorded by Ugo Lippi.[1] His conclusions are as follow: (1,) Neurodin may be given in doses from 0·5 to 3 grammes; these are effective and well borne, and may be repeated several times a day; (2,) These doses are perfectly harmless, and produce no other ill-effect than occasional diarrhœa, with or without intestinal pain; (3,) Hardly any physiological effects were noticed; in rare cases there was a very slight diminution in the heart beats; no marked effect on the kidneys was observed; (4,) As regards the analgesic action of the drug, it was found to have the property of soothing and even of abolishing pain, whether neuralgic in character, or symptomatic of an organic affection; its action, however, is uncertain, and notably inferior to that of other similar remedies, such as phenacetin and antipyrin. The remedy, moreover, has the great disadvantage of not being readily soluble in the vehicles in common use.

REFERENCE.—[1] "Il Policlinico," Feb. 15, 1895.

NUCLEIN.

We briefly described this preparation, made from yeast, in our last issue.[1] Theoretically it appears to have the power of stimulating the production of white blood corpuscles, and as these are the natural defenders of the body against disease germs, it appears to have a wide field over which it should exercise a benign influence. It might possibly prove destructive to the germs of **Small-pox, Scarlatina, Typhoid**, and other contagious diseases, and also be used as a general agent for improving the blood supply.

Dr. Frank W. Garber[2] describes some cases, which were treated as follows: "The dosage ranged from 15 to 45 minims, 30 minims being for the most part the maximum dose. The solution was prepared by Parke, Davis & Co., of Detroit, Mich., from yeast, after the formula of Dr. Vaughan. The injections were made into the muscular tissue, and as near the site of the tubercular lesion as could be, though this does not seem to be material, and they were often given in the arm. An ordinary thirty-minim syringe was used in all the cases except one. The needles should be frequently sharpened. Both the needle and the part into which the injection is made should be thoroughly antisepticized. Rubbing the part after the injection seems to cause more speedy absorption of the solution, and has seemed to me to lessen the period of pain experienced, which was in my cases never lengthy nor severe. The part, from frequent injections, becomes larger and more insensible to the injection. Abscess following an injection has never resulted, in my experience."

Most of the cases recorded of tubercular disease of the lung showed decided improvement, but the treatment was by no means confined to the injection of nuclein, and their value is therefore largely discounted.

Bleyer[3] speaks highly of nuclein in **Diphtheria,** and **Follicular Tonsillitis,** and in the form of diphtheria known as **Angina Lacunaris.** In the last disorder he gave 15 to 20 minims by hypodermic injection every twelve hours, and obtained "a remarkable result within twenty hours in every case." No other remedy was employed, excepting salt-water gargling or douching, simply to remove the loose *débris* lying about the mouth and throat. In but a small per cent. of the cases the temperature mounts after the first injection from $\frac{1}{10}°$ to 3° F., but the high temperature rise was an exception. The pulse runs from 100 to 160. All symptoms usually found present in this form leave the patient within the first twenty-four hours. Some fever remains for thirty-five hours, then disappears, minus the exhausted condition. Nuclein seems to possess with all its specific action another advantage —that of a dynamogenetic power, increasing the vigour of the central nervous system.

In that type known to us as **Pseudo-diphtheria,** the same promptness of action was immediately noticeable, with the one exception, that a longer time (three to four days) was needed for a complete recovery. In these patients the injections were made also in divided periods of time, but oftener exhibited (every eight hours), each consisting of 20 minims, and continued for three days. In addition, the gargling or irrigation of salt water every hour was practised, all of the eight patients recovering within four days.

Bleyer records nine cases of true diphtheria, in which seven recovered. Three cases treated since then died of toxæmia and heart paralysis.

M. O. Teigen[4] describes the use of nuclein in four cases of pulmonary tuberculosis. He concludes from the results obtained that "we have in nuclein a therapeutic antagonist to incipient **Pulmonary Phthisis** of considerable potency and efficiency. Whether the conception of its *modus operandi* should be some kind of a capability to recruit, upon short notice, irresistible, triumphant hosts of phagocytes to contend for supremacy with the encroaching bacilli on the pathological battle-field, or whether it acts directly as a bactericide itself without phagocytic intervention, the augmentation of these being only secondary phenomena resulting from diminished infection and invasion, is immaterial as regards the clinical value of the remedy in tuberculosis, and may be a moot point with theory-spinners for

years to come. But whatever the conception, the all-important therapeutic fact remains that incipient consumptives, under the continued influence of nuclein, improve, and may sometimes go on to apparently perfect recovery."

REFERENCES.—[1] "Medical Annual," 1895, p. 38; [2] "Therap. Gaz.," Jan. 1, 1895; [3] "Medical Record," Jan., 1895; [4] "Therap. Gaz.," June, 1895.

OREXIN HYDROCHLORIDE.

Dr. Ferdinand Battistini[1] has carried out a series of experiments to determine the value of this drug. Severe toxic symptoms have not been noted; in cases where the remedy has been used for more than six weeks there is a lessening of the hæmoglobin. In artificial digestion it apparently has no effect upon peptonization. As regards the appetite—of twenty-five cases it failed in six, a slight increase in thirteen, and a marked improvement in six. The results are apparently not very encouraging for the remedy, although some failures may have arisen from the use of the remedy in pill form.

REFERENCE.—[1] "Therapeutische Monatshefte," 1894, Heft 12, S. 614.

PHOSPHATES.

The glycero-phosphates have been employed by Dr. Albert Robin during the past six years.[1] He finds that subcutaneous injections of sodium glycero-phosphate increased the quantity of urine five times in eight; in general, the specific gravity lowers as the quantity increases; the solids increased five times in seven; and this increase indicates an acceleration of total nutrition. Both organic and inorganic changes are increased, the latter in a manner perhaps more constant. The nitrogenous metabolism increases; there is a better utilization of the disintegrated products, and a tendency towards a diminution of uric acid. In the majority of cases the total sulphuric acid increases as well as the coefficient of sulphur oxidation, so that the metabolism of organs rich in sulphur, as the liver, for example, and the evolution of sulphurous products become more complete. Sodium chloride increased six times in seven, corresponding to the clinical fact, an increase of appetite. These drugs do not tend toward the denutrition of organs rich in phosphorus, but, on the contrary, they act upon them as a means of preventing waste. And, further, they probably favour the assimilation of a small quantity of the alimentary phosphates. In a study of their effects upon lime-salts it was shown that there was an acceleration of the nutrition of bones, without, however, influencing in a corresponding manner the phosphorus-metabolism in the same tissues. They do not have a marked effect upon intestinal fermenta-

tions. Taken as a whole, these observations show the great value of the glycero-phosphates in checking the denutrition of the nervous system, and in aiding its restoration to normal conditions. The indications for the use of these drugs do not fall under the title of any one disease, nor is any one disease a contra-indication. They are useful when: (1,) There is a failure in nitrogenous metabolism, as, for instance, in **Chlorosis, Chronic Gout, Diabetes, Obesity, Chronic Pulmonary Phthisis, Chronic Bright's Disease, Phosphatic Albuminuria, Dyspepsias** with gastric insufficiency and diminished hydrochloric acid, and debilitated old persons; (2,) Cases of hepatic insufficiency, brick-dust sediment in the urine, urates tinged with uro-erythrin; (3,) Malnutrition of the nervous system, whether due to an exaggerated denutrition or insufficient assimilation. As examples: convalescence from acute diseases, especially from **Epidemic Influenza,** the various **Phosphaturias,** a large number of **Neurasthenias** when they follow phosphaturia, **Phosphoruria, Dyspepsias** from gastric insufficiency, intellectual fatigue with nervous *surmenage*, **Muscular Atrophy, Paralyses** in general, pains of **Ataxia, Tic Douloureux** of the face, **Sciatica,** and **Chronic Lumbago.** No effect has been noted in mental diseases nor in progressive general paralysis. One case of **Addison's Disease** improved; (4,) In bone-diseases, as **Rhachitis, Osteomalacia, Fractures,** and diseases of growth, the lime and magnesium glycero-phosphates should be employed. In short, the glycero-phosphates should be considered as remedies for nervous depression. For subcutaneous injection, the salts of lime, sodium, and magnesium alone have been used in solution in the percentage of 5 for lime and 20 for sodium; the amount injected representing from 1 to 8 grains of the lime salt, and from 3 to 20 grains of the sodium salt. Strict antiseptic precautions must be observed, as these solutions are excellent culture-media for many microbes. When given by the mouth, the salts of lime, sodium, potassium, and magnesium can be given in daily dosage of from 5 to 15 grains, preferably during the meal. The iron salt is administered in from 1½ to 5 grains per day.

REFERENCES.—[1] "Bull. gen. de Therapeutique," 1895, 18 Liv., p. 385, 20 Liv., p. 433; Ref. "Amer. Journ. of Med. Science," Aug., 1895.

PHYTOLACCA DECANDRA.

In an article by Dr. Goodman,[1] a new use for the "Poke weed" is described, which is well worthy of careful trial. The author has employed a watery extract of the green leaves as an application for **Epithelioma,** and he states that this agent acts as a caustic of a harmless character, while it possesses specific curative properties.

The method of using the remedy is to bruise the green leaves to a pulpy mass ; collect the expressed juice in a shallow receptacle, as a plate ; allow it to evaporate to a thick, pasty consistency ; spread a portion of this on a piece of silk or other suitable cloth, and apply to the morbid growth.

The plaster should be removed ; the part washed twice daily. The remedy causes severe pain. It has a selective action for the morbid tissue ; follows out all the irregularities of the epithelioma ; causes, as it were, its liquefaction and removal, and then acts as a cicatrizant for the open sore.

As soon as all the morbid tissue is destroyed, a bed of cicatricial tissue begins to spread from the periphery, and as this occurs the plaster should be cut smaller each day, so as to conform to the size and shape of the surface to be covered by it.

Under this treatment Dr. Goodman has seen large epitheliomatous masses destroyed in a few weeks, and nothing but a faint scar left at the place occupied by the growth. In no case was there a recurrence at the original site.

Unlike other remedies, it can be used fearlessly, does not endanger the patient, combines within itself a caustic action and healing property, and requires to be used in the same manner from beginning to end.

The value of this drug as a therapeutic agent formed the subject of an article in the "Medical Annual" for 1888, by Dr. Percy Wilde,[2] but it has not been as extensively employed in Great Britain as it has been in the United States, where its virtues are more fully known.

The ashes of the stems and leaves yield, according to Braconnot, not less than 4·2 per cent. of pure caustic alkali ; in the living plant this is neutralized by an acid closely resembling malic acid.

The root has been most extensively employed for medicinal purposes, and it was a tincture made from the root which was used by Dr. Percy Wilde in the treatment of **Diphtheria.**[3] The form of diphtheria in which it proved most serviceable was not the true malignant type, but was the sporadic type, which has a rheumatic or catarrhal origin. It commences with severe pains over the body, fever, and prostration, the pains in the throat being felt chiefly at the root of the tongue, the tonsils, and extending to the ears. The exudation is either white or greyish-white, and there is not the same fœtor of the breath as in its malignant form. In such cases, tincture of phytolacca radix, in doses of from 5 to 10 minims, is said to be specific. A gargle of the same remedy is frequently employed intercurrently.

Another use for the tincture of the root has been found in the treatment of **Neuralgia of the Breast**, and also in actual inflammation of that organ. In the former condition it is desirable to use small doses (♏j ad iij of the tincture), as phytolacca has the power of inducing neuralgia of this organ if given in full doses. Its use in **Mastitis** appears to have been discovered by American farmers, who use it as a remedy for reducing the "caking of the udder" in cows, and it undoubtedly has a power resembling belladonna in relieving the engorgement of the breasts during lactation. For this purpose it may be given internally, and while the liquid extract of the root is used as a paint, the breast being covered with a warm foment pad.

The tincture of the root is also used as a popular remedy in **Rheumatism**, but its exact sphere of action appears to be in cases where rheumatism invades the fibrous tissues, such as the sheaths of nerves and the periosteum. It has proved beneficial in cases of rheumatism where there is a well marked syphilitic taint. The tincture of the berries has also been used with success in these cases, and is said to act even better than that of the root.

The juice of the berries has been more recently used as a remedy for **Obesity**, and good results are said to have followed its employment. In cases of poisoning by the berries the symptoms have somewhat resembled those of strychnine; tonic spasm of the muscles have been produced, the hands clenched, the feet extended, and the toes flexed; while the back was in a condition of opisthotonos. Ointments made from the leaves or the root (℥j ad ℥j) have been employed for **Psora, Tinea-Capitis, Sycosis** and **Favus.**

It has been credited with giving relief to **Cancer** when used internally, while the ashes of the plant have been frequently used as a caustic.

There is therefore every reason to suppose that the use of the extract of the leaves, as recommended by Dr. Goodman, will prove a useful addition to our therapeutic resources.

REFERENCES.—[1] "South Carolina Medical Journal," April 20, 1895; "Therap. Gazette," August, 1895; [2] "Medical Annual," 1888, p. 81; [3] Ibid., 1887, p. 114.

PILOCARPINE.

Dr. Humbert Molliere[1] has made some interesting researches on the value of pilocarpine applied externally in cases of **Nephritis**. The treatment consists in rubbing into the skin an ointment composed of white vaseline (100 gr.) and nitrate of pilocarpine (5 to 10 centigrammes), and then covering up the part with cotton-wool and securing with bandages. The patient generally soon experiences a

feeling of comfort, dyspnœa abates, and respiration becomes more regular, and only in very rare cases is the treatment badly borne. Perspiration quickly occurs, and is very profuse, in spite of the small quantity of alkaloid used, and at the same time there is abundant diuresis, and Dr. Molliere has drawn up interesting charts, showing a rise and fall in the quantity of urine corresponding to the pilocarpine applications. All varieties of nephritis have been treated by this method, but the best results have been obtained in acute cases, where the albumen has often quickly disappeared, and a general amelioration of symptoms rapidly taken place, these good results being chiefly attributed to diminished congestion caused by the drug. Less favourable cases are naturally those in which the cardio-vascular system has already become secondarily affected. Where actual uræmia has set in this method is not so satisfactory, but is found to be successful if applied after the more pressing symptoms have been relieved by more energetic methods. The physiological action of pilocarpine when thus applied is found to be almost entirely local, and does not cause excessive secretion of the salivary and other glands, as it does when given by the hypodermic method.

REFERENCE.—[1] "Lancet," July 6, 1895.

POTASSIUM PERMANGANATE.

Dr. James C. Carpenter[1] records a recent case in which this salt proved an effective antidote to morphia poisoning. The atropine treatment had been tried previously in each case.

In the second case, 5 minims of a saturated solution were injected into the thigh of an infant who was almost moribund from the effects of an opiate contained in some patent "soothing drops." The child recovered, but the author mentions that an abscess resulted at the point of injection. This might be expected. From personal experience the writer knows that even a dilute solution of the permanganate causes a great deal of pain, when injected under the skin. He employed it upon himself, at the site of a bite from a dog suspected of rabies; instead of cauterizing the wound. The results in Dr. Carpenter's case are so satisfactory that the permanganate should be undoubtedly given a trial in such cases, but we would suggest that it should be used in larger quantities in a more dilute form, such as 5 grains to the ounce of distilled water. If this was employed in injections of 1 drachm at frequent intervals and at different points of the body, the risk of abscess might be avoided.

In reference to the internal use of permanganate of potass, Dr. Chambers[2] has made some experiments from which he concludes that:—

(1,) Potassium permanganate in dilute solution, not stronger than 1 grain to an ounce, may be given by the stomach without danger.

(2,) Potassium permanganate, subcutaneously, is poisonous.

(3,) Potassium permanganate, grain for grain, completely decomposes morphine, the decomposition occurring in acid media more rapidly than in a neutral medium.

(4,) Food-stuffs and acetic acid do not interfere with the decomposition.

(5,) Potassium permanganate is an efficient antidote if taken while the morphine is in the stomach.

The question[3] still remains as to whether potassium permanganate is of therapeutic use after the morphine is absorbed into the system. It has been proved conclusively that if morphine is introduced subcutaneously into the system, it is excreted into the stomach. Now, the morphine passes from the blood into the stomach by osmosis and by excretion, and, by the principle of osmosis, more morphine will be excreted if it is decomposed as soon as it passes into the stomach. Reasoning on this principle, we would expect that repeated small doses of potassium permanganate by the stomach would be of use in cases where the morphine has been absorbed into the system. This is rendered more probable by the fact that morphine, as a rule, is a slow-acting poison.

REFERENCES.—[1]"Therap. Gazette," March, 1895; [2]"Canadian Pract.," Sept., 1894; [3]"Therap. Gazette," Feb., 1895 (Editorial).

RHUS TOXICODENDRON.

Dr. H. M. Whelpley,[1] recognizing toxicodendric acid as the active medicinal and poisonous principle of the plant, has ascertained that handling of the dried and compressed plant will produce the well-known eruption, although its poisonous action may be impaired by drying. The drug has been recommended as useful in a large number of morbid conditions, from nocturnal incontinence of urine to pemphigus. Among the antidotes to its poisonous action may be cited: solution of chlorinated lime, cold lead-water, sodium hyposulphite, saturated tincture of lobelia, hamamelis, bismuth subnitrate, phenol, linseed oil, strong coffee, and potassium permanganate.—

REFERENCES.—[1]"Bulletin of Pharmacy," 1894, No. 12, p. 532; Ref. "Amer. Journ. of Med. Sciences."

SENECIO JACOBÆA.

Dr. Murrell has used this drug in many cases of functional **Amenorrhœa** with favourable results, but the results are not so good when anæmia occurs in conjunction with the amenorrhœa.

He used the fluid twice in doses of 20 drops four times a day in water.

SODIUM (Fluoride of).

Bourgois[1], while treating patients suffering from **Pulmonary Phthisis** by inhalations of hydrofluoric acid, was struck by the following fact: A woman under treatment used frequently to bring her child with her. This child, who was afflicted with spinal caries, but without any chest lesion, used to sit with its mother in the inhalation chamber, and after some sittings its weight had increased from 14½ kilos to 19 kilos. Other children affected with non-pulmonary tuberculous lesions treated in the same way showed a similar improvement. Bourgois then took to administering fluoride of sodium by the mouth. The cases selected presented various tuberculous troubles—chronic bronchitis, otitis, and conjunctivitis—and all had a tuberculous family history. Under the fluoride treatment they all improved notably—an improvement which has persisted. Bourgois concludes: (1,) Purified fluoride of sodium has a marked action upon children, whether they only have a tuberculous diathesis, or are already tuberculous, and the good results are enduring; (2,) The dose is from $\frac{1}{10}$ milligramme to 5 milligrammes a day; (3,) When the specific effects of the remedy manifest themselves the dose is lowered; and (4,) Children take the drug very well, and hardly ever show any intolerance.

Dr. Tuffier,[2] of Paris, and Dr. Blaezot have employed an aqueous solution of fluoride of sodium as an external antiseptic in **Cystitis** and **Vaginitis**, and as a **Mouth-wash**, in all of which it proved very efficacious. The strength employed was a ½ to 1 per cent. solution.

It possesses the property of dissolving albuminous substances, which may possibly account for its good effects. It cleans the skin exceedingly well, and gives rise to a delightful feeling of softness and coolness, both when employed externally and when applied to mucous surfaces—as, for example, when it is used as a mouth-wash, for which it is eminently suitable.

REFERENCES.—[1] "Journ. of Med. Surg. and Pharmacology," (Brussels); [2] "La Semaine Médicale," March 20, 1895.

SUGAR.

Professor Bossi of the Obstetrical and Gynæcological Clinic of Genoa, Italy, has been experimenting with ordinary cane sugar as an oxytocic, and reports that sugar in doses of 1 ounce dissolved in 8 ounces of water is an effective oxytocic, acting usually within a half hour after its administration. Usually a single dose is sufficient. In extreme cases a second dose, administered at the end of two hours, was found effective. The advantage claimed for sugar as a stimulant in labour is the fact that it does not produce tetanic contractions and

does not cause retention of the placenta. These observations seem to agree with physiological experiments made within the last year or two, which indicate that the ingestion of sugar is followed by immediate and considerable increase in muscular energy.

REFERENCES.—"Modern Medicine;" Ref. "Lancet," March 23, 1895.

SULPHANILIC ACID.

Erhlich and Kroenig showed in 1885 that the combination of sulphanilic acid with the iodides converts the harmful and nascent nitrites found in the saliva and nasal secretions into inoffensive products.

Valentin has shown latterly that we possess in this drug an excellent remedy for certain symptoms of **Acute Catarrh.** Thus, in acute coryza, the redness and swelling, with profuse discharge, are notably diminished or completely aborted after a few hours by its use. In acute **Laryngitis** and **Otitis Media** the drug has an action, but it is less certain, the pain alone being diminished in the latter disease. The influence upon catarrhal conditions is not a permanent one, and it is necessary to repeat the dose at the end of twenty-four to forty-eight hours.

It is given as follows :—

℞ Acidi Sulphanilic	ʒiiss	Aq. Dest.	fʒx
Sod Bicarb.	ʒij		

M. Sig.—A dessertspoonful in water twice a day.

Or as follows :—

℞ Sodii Sulphanilat.	ʒiiss	Aq. Dest.	fʒviss

M. Sig.—3 teaspoonfuls twice daily.

REFERENCES.—"Therap. Gazette," July, 1895; "La Médecine Mod." March, 23, 1895.

SULPHITE OF MAGNESIUM.

Dr. Brownlow R. Martin[1] strongly urges the use of insufflation of the pure sulphite of magnesium in the treatment of **Diphtheria**, and records cases of undoubted true diphtheria to show that clinical experience supports the deduction of the laboratory as to the power possessed by the salt to destroy the bacillus.

We gather from Dr. Martin's paper that it is in the early stage, and before the toxic substance produced by the bacillus has entered the blood that the application of sulphite of magnesium is likely to prove most useful.

REFERENCE.—[1]"Clin. Journ.," Aug. 14, 1895.

TANNIGEN.

This is described[1] as an "acetic acid extract of tannin." "Two molecules each of three hydroxyl groups are replaced by one of acetyl." Tannigen appears in the form of a yellowish slightly hydroscopic powder, tasteless and odorless, readily soluble in alkaline solutions and insoluble in water and diluted acids.

Meyer[2] affirms that experiments on animals show that tannigen produces no disturbances of any kind in the stomach, such as loss of appetite, and is well tolerated in quantities of several grammes, but in the intestinal canal diminishes the secretion and renders the fæces more solid. The powder, therefore, passes through the stomach without occasioning the least disorder, and in the intestines, in consequence, the alkaline reaction is split up into tannic acid and acetate of potash.

Experiments made by Professor Muller in the Medical Polyclinic of Marburg confirm the observations previously made on animals. He found that the powder was always willingly taken by patients, even for weeks, without any disturbance whatever. According to Muller, it seems especially indicated in **Chronic Intestinal Catarrhs**, in which improvement was noted usually within a short time from doses of 0·2 to 0·5 gm. thrice daily, while in doses of 3·0 to 4·0 gm. it was well tolerated.

Dr. Carl Kunkler records a number of cases of **Enteritis** and **Diarrhœa** treated by the internal administration of tannigen, in which the results favourably impressed the author.

He says, in the first stage of an enteritis, it is advisable to combine tannigen with a strong disinfectant (naphthaline or calomel) under some circumstances. At the same time it would also be desirable to continue the administration of tannigen for some time after the disappearance of the catarrhal symptoms for the relief of any remaining intestinal irritation and for the prevention of sequelæ.

In view of the favourable influences of this drug in cases of enteritis, we are warranted in concluding on theoretical grounds that the new remedy will also prove serviceable in other intestinal affections, especially cases of typhoid ulceration. It is also worthy of a trial in **Albuminuria**, in which tannic acid has been frequently employed since its recommendation by Frerich.

REFERENCES.—[1] "Allgem. Medicin. Central Zeitung," Nov. 13 and 14, 1894; Translated "Time and Register" (Philadelphia), June 1, 1895; [2] "Deut. med. Woch.," Aug. 2, 1894.

THIOFORM.

This is a combination of bismuth, sulphur, and salicylic acid. It appears as a grayish yellow powder, and is one of the many powders intended to take the place of iodoform. It has the advantage of being

odourless and tasteless, and is practically non-toxic. It is insoluble in water, alcohol and ether, but becomes more soluble in the presence of an alkali.

Alfred Strener[1] has used it largely for **Ulcers** and **Chancres,** and also particularly for **Inflammation** and **Catarrh of the Middle Ear.** He has also employed it *internally* for acute external catarrh. His conclusions are as follow :—

(1,) Thioform is to be recommended for drying and lessening of secretions, and in all cases of profuse suppuration. It is non-toxic, and can be applied locally in large quantity.

(2,) It is strongly recommended in **Moist Eczema** in the form of a 10 per cent. salve ; and

(3,) In acute and chronic **Otitis Media Suppurativa,** as well as for **Contracting Granulations** and **Small Polyps.**

REFERENCE.—"[1]Wiener Med. Woch.," September, 1894.

THYROID EXTRACT.

Dr. W. Dale Jones records the case of a medical man who while taking thyroid extract for psoriasis (4 tabloids daily) was seized with acute glycosuria. The symptoms abated when the thyroid extract was left off, and anti-diabetic diet adopted. Polyuria has occurred in several cases after the use of thyroid extract, but this is the first recorded case in which glycosuria has been caused by its administration.

REFERENCE.—" Brit. Journ. Derm.," June, 1895.

TUSSOL.

This name has been given to a compound of amygdalic acid and antipyrin. Dr. Rehn, of Frankfort-on-the-Main, has used the drug recently in quite a number of cases of **Whooping Cough** in children. He has found it useful in reducing the frequency of the paroxysms and mitigating their intensity, that its action is different from that of simple antipyrin, and that no untoward effects have been observed from its use. It is soluble in water, and as a corrigent raspberry syrup is better than milk. The minimum doses for children are as follow : Under one year of age, from $\frac{3}{4}$ of a grain to $1\frac{1}{2}$ grain, two or three times a day ; from one to two years, $1\frac{1}{2}$ grain three times a day ; from two to four years, from $3\frac{3}{4}$ grains to 6 grains, three or four times a day ; for older children, $7\frac{1}{2}$ grains, four times a day or more.

REFERENCE.—" Med. and Surg. Reporter," March, 1895.

URANIUM NITRATE.

Dr. Samuel West, of St. Bartholomew's Hospital, records the favourable results obtained by the use of this salt in several cases of **Diabetes.** The paper is of some interest, but Dr. West overlooks

the fact that the drug has been in everyday use for many years, both in Europe and America, and that a large amount of experience has been accumulated in respect to its action, which does not warrant the assumption that it is a universal remedy for diabetes, although it has valuable properties in the treatment of glycosuria.

Dr. West tells us that "Leconte stated that the prolonged use of *small* doses given to dogs produced glycosuria. On this Dr. Hughes, a homœopathic physician, suggested the use of uranium in diabetes. He said he had tried it in several cases, and found that many were relieved, and several completely cured. The doses that he used were from $\frac{1}{100}$ to $\frac{1}{30}$ of a grain. Beyond these stray observations nothing, the author believed, was done until Chittenden published his first paper in 1888, and a second, in association with Lambert, in 1889."

This is not quite correct, because in 1887 the value of uranium was pointed out in the "Medical Annual" (p. 98) by Dr. Percy Wilde, who recommended that it should be used in doses varying from $\frac{1}{8}$ to 3 grains. Nor can Dr. Hughes' recommendation of the drug be regarded as a "stray" observation. If Dr. West had referred to Dr. Hughes' article, in his work on "Pharmacodynamics," he would have found a fairly complete history of the use of uranium for diabetes up to the year 1880, when this work was published. He would have found that so far back as 1874, Mr. Carey contributed a paper to the "Lancet" recording his success with this drug in the treatment of diabetes.

References are also given to papers published on this subject by Drs. Lowder, Cume, Jousset, Bähr, Drysdale, and John and Edward Blake, Cornell, Zwengenberg, Fischer and Koeck.

Dr. Nogdeburg states that, "I have satisfied myself that after several weeks' ingestion of small doses of uranium muriaticum or nitricum by healthy persons, sugar can be found in the urine."

We notice also that although Dr. West quotes correctly Leconte's statement that "the prolonged use of *small* doses given to dogs produced glycosuria," the "British Medical Journal," in a leading article, written to support Dr. West in some public correspondence, which took place in reference to the homœopathic origin of his remedy, describes the action of uranium in producing glycosuria as the effect of a *large* dose. The fact is of some importance; so far we have no information that a toxic dose of uranium will directly cause glycosuria, although it may appear as a secondary effect. All the experimenters agree that it is by small doses frequently repeated that glycosuria is produced. If diabetes could be directly caused by a single toxic dose it is very improbable that the large dose given by Dr. West in some of his cases, *i.e.*, 15 grains, would have benefited the patient.

If uranium produces glycosuria by exhausting certain nerves upon which it has a selective action, then it is easy to understand that when these same nerves are exhausted by disease, a small dose of the same salt would act as a stimulant to them, because exhaustion is physiologically an over-stimulation, or, as Claude Bernard put it, "all those causes which exhaust the vital properties of a tissue or of an organic element, commence by exciting them." Claude Bernard taught us to regard all drugs as "excitants which exhaust," and every experiment in therapeutics proves that, unless we use drugs within the range of their exciting or stimulating powers, we produce an exhaustion of the functions acted upon.

But if the glycosuria produced by uranium is the effect of small repeated doses, it is possible that its action is due to the stimulant effects of the drug. If this is the case, then in order to exhaust or depress these nerves we shall have to use uranium in doses sufficiently large to produce this depression. In this case we should look only for palliative rather than curative effects, as the disease would return directly the exhaustion produced by the disease is recovered from. The cases recorded by Dr. West rather support the latter view, although as to the nature of its action he confesses that he can do nothing but speculate.

Leconte found, as recorded by Dr. West, that full doses of nitrate of uranium acted as an irritant poison, producing gastro-intestinal irritation, but when administered to rabbits in full doses it caused rapid emaciation, and the animal died with general weakness, loss of co-ordination, and paralysis of the locomotor muscles. Besides these symptoms in dogs acute parenchymatous nephritis was produced, with much albumin in the urine. After the albumin, a few days later, sugar also appeared in the urine, and this they regarded as very characteristic of uranium poisoning. It will be observed that here the glycosuria was a secondary action coming on after the effect of over-stimulation was subsiding, and when the nerves would be in that state of excitement attending recovery from exhaustion. In other cases where glycosuria was the *only* marked symptom produced, the drug was given in small repeated doses over a period of time. It is of very great importance to the recognition of the proper dose in administering this drug that we should have correct reports as to the degree of stimulation required to produce glycosuria.

By referring to the clinical experience of those who have long used the drug, which the "British Medical Journal" regards as a "new resource," we are inclined to think that it will only be found to exercise temporary or palliative effects in true diabetes, but that it

will be found useful in those conditions where hepatic or gouty derangement is the cause of the glycosuria. It is noteworthy to observe that in Dr. Blake's proving of the drug (quoted by Dr. Hughes) the action was to increase the total quantity and specific gravity of the urine, the excess being either in urates or chlorides, and also to render it more irritating, causing burning and mucous discharge. Further experiments might prove that the nitrate of uranium assists the elimination of uric acid, and as many physicians regard the glycosuria of gouty patients as a natural means of eliminating uric acid, it is possible that such experiments would throw light on the action of the salt. Experiments have also proved that it is capable of causing ulcer of the pyloric end of the stomach and duodenum. This action is specific, because it occurs in animals in which the drug was not introduced directly into the stomach. The late Dr. Drysdale recorded a case of ulcer of the stomach cured by uranium.

In respect to the administration of this salt, good results have been recorded with doses of $\frac{1}{8}$ to 3 grains repeated three or four times during the day. Dr. West states that as to the size of the dose, experimentally it has been proved that in large doses uranium is an irritant poison. In large doses it would probably act as an irritant to the stomach and bowels; still, he has given 10, 15, and 20 grains three times a day without any such troubles being produced. Something, no doubt, depends upon idiosyncrasy. At the same time he thinks it possible that when the patient has once come under the influence of the drug a reduced dose may be sufficient to keep its action up.

Next as regards the loss of flesh. In the second case the patient attributed her loss of flesh to the action of the drug. This, says Dr. West, is doubtful, and certainly the first patient continued to gain weight while taking much larger doses.

As regards the salts of uranium, he has used only two—the nitrate and the double chloride of uranium and quinine. So far as he can see, there is no difference in the action of these two salts; still it may be that the uranous salts, instead of the uranic which he has been using, may have a different effect.

As to the method of administration, says the author, the nitrate is best given freely diluted with water and after food, commencing with a small dose of 1 or 2 grains twice daily after the chief meals, and increasing the quantity slowly at intervals of a few days until its effect is produced. So given he has not found it disturb digestion or cause any irritation of the stomach or bowels, and he has never found its prolonged administration produce albuminuria.

REFERENCE.—"Lancet," June 13, 1894.

PLATE I.

Fig. A.

Fig. B.

Fig. C.

Fig. D.

Fig. E.

Fig. F.

Fig. G.

Fig. H.

Fig. I.

Fig. J.

Fig. K.

Fig. L.

Fig. M.

Danielsson & Co., Chromo-lith., London.

Part II.—SPECIAL ARTICLES.

Malaria.

HOW TO OBSERVE THE PARASITE OF MALARIA.

By GEORGE THIN, M.D.

The Hæmatozoön, which causes malarial fever, lives and grows in the red corpuscles of the blood. When it reaches maturity, it forms a number of spores by direct division, which are set free by the destruction of the red corpuscle which harbours it, thus causing the access of fever. These spores, set free, soon attack other red corpuscles, and penetrate into their substance, in which they develop and produce another cycle. There are several varieties of the parasite ; one which completes its cycle in seventy-two hours, causing quartan fever ; one in forty-eight hours, causing tertian fever ; and one in twenty-four hours, causing true quotidian fever, to which belong the pernicious malarial fevers. In certain chronic irregular fevers, a special form of parasite, called the "crescent" form (or "semi-lunar") is found free in the blood from the finger, and occasionally partially developed in the red corpuscle. Its genesis and the form of its earlier conditions are still subjects of dispute.

The earliest stage presents the same appearance in all these varieties, and it is only after a certain development has taken place that they can be distinguished from each other. For this early stage high and good powers of the microscope, and skill on the part of the observer, are necessary, when they are looked for in the freshly-drawn blood from the finger. For the more developed forms of the tertian and quartan parasites, and for the crescent bodies, a magnifying power of 500 to 600 diameters is sufficient for their detection, but for their study a higher power is required. For the proper observation and study of all the forms of the parasite, a magnifying power of 1,000 diameters is necessary, and the optical apparatus must be good.

Examination of Fresh Blood.—Slides and cover-glasses should be cleaned in mineral acids, and afterwards in alcohol. Preserve them in alcohol till they are required, and in using them touch them with the finger as little as possible. Wash the bulb of a finger first with soap and water, and then with alcohol, and bind the first joint lightly with an elastic ligature. Prick the bulb with a sharp-edged needle, wipe off the first drop, then take a small drop, about the size of a pin's head, or very slightly larger, on a cover-glass, and lay it on a slide.

It is ready for immediate examination; but to prevent the blood drying it is convenient to pass, with a camel's hair brush, a streak of vaseline round the edge of the cover-glass, or what is much better, melted paraffin, which immediately cools and forms a solid border to the preparation. If parasites are present in the first or "amibula" stage, they may be seen as small, generally round, light spots on the red corpuscle. If they are motionless, they are very difficult to distinguish from the colourless round spots often seen in the red corpuscles. If they display amœboid movements, they can be easily distinguished. As they further develop, they become larger, and very minute grains of pigment become visible in their substance, mostly on the periphery. In the quotidian parasite this pigment is extremely fine, and only visible by high powers. In the tertian parasite it is a little coarser, but still very fine, and is generally seen in very active movement. In the quartan parasite it is coarser than in the tertian, and its movements are very sluggish. As the parasite approaches maturity, the pigment masses itself in the form of a central clump, and the substance of the parasite is seen to divide into spores, separated by lines which radiate to the centre, the so-called "rosette" form. In the quartan parasite more particularly, a minute round point can be seen in each spore. The crescents which are free in the blood can be easily recognized by their characteristic shape, which may be either slightly curved or straight, and by their size, but more easily by an accumulation in the centre of a small pigment mass which is seen under very high powers to be composed of very delicate and fine pigment rods. Somewhat large rounded bodies, without evident structure and permeated uniformly with minute pigment granules, represent parasites in which sporulation has not taken place, and which are evidently sterile. The pigment is characteristic of them. Occasionally, white corpuscles can be seen with small clumps or spheres or rods of pigment in their protoplasm.

It is always convenient to examine the parasite after it has been stained, and in preparations containing only the very young forms, staining is necessary to confirm the diagnosis. The parasite may be stained and examined immediately in the fresh blood.

The following methods are recommended by Feletti :—

(1,) Place a small drop of alcoholic solution of methylene blue on a slide. The drop spreads out and dries. The quantity of colour left should be only enough to colour the glass very slightly. Place on the centre of the spot a drop of the blood to be examined. Apply the cover-glass, and seal the preparation with paraffin. The parasites, if present, are stained blue.

(2,) Take one drop of saturated alcoholic solution of fuchsine or methylene blue, and place it in a watch-glassful of distilled water. Place a drop of this diluted stain on a slide. Then place a small drop of malarial blood on a cover-glass, and apply the cover-glass to the drop on the slide. A slight movement on the edge of the cover-glass is sufficient to mix the blood with the stain. A good preparation made in this way is transparent, and does not show the colour of the blood. The nucleolar structures of the parasite are rendered evident by this method.

The writer[1] has found the following method very useful in observing crescent forms, particularly when they are few in number. It also renders the intra-corpuscular forms of the malarial parasite visible.

A small drop of saturated solution of methyl green, to which 1 per cent. of acetic acid has been added, is placed on the slide, and the cover-glass with the freshly-drawn blood is placed over it, and sealed with paraffin. The corpuscles being decolourised no longer impede observation, and any crescents which are present can be easily seen by a low power. They are recognized by the small clump of pigment in the centre. The body of the parasite is seen as a smooth well-defined body of a pale green colour. (See *Plate I*, *Figs. I* and *K*). All the forms of the malarial parasite developing within the corpuscle are stained with this fluid (See *Figs. L*, *M*, and *N*), and are easily seen in the fresh blood, but if the preparations are kept, the colour soon begins to fade.

The Staining of Dried Preparations of Malarial Blood.—Few men actively engaged in practice can afford the time for prolonged examination of blood at the time when they have drawn it. The use of dried preparations is therefore necessary. There are also questions connected with the delicate structure of the parasite that do not necessarily have great interest for the practising physician, which can be best studied in dried preparations. The thin layer of dried blood is obtained by placing a small drop taken with the same precautions as when fresh blood is examined, and applying the cover-glass on which it is received diagonally over another cover-glass. As soon as the drop has spread out between the cover-glasses, the one is drawn gently away from the other, and the blood allowed to dry. When the layers of blood are dry, place them for ten minutes in a mixture of equal parts of alcohol and ether. Again let them dry, and put them aside for future use. They may be preserved indefinitely. To stain these cover-glasses, methylene blue, alone or in combination, is best for diagnostic purposes. Löeffler's alkaline solution is an active dye and is very convenient. It is made by adding 30 cubic centi-

métres of saturated solution of methylene blue in alcohol to 100 cubic centimétres of solution of potash of the strength of 1 in 10,000. Filter some of this solution into a watch-glass; float the cover-glasses on the fluid for ten to twenty minutes, then rinse them with distilled water, let them dry thoroughly, and examine either dry or mounted in balsam. Dried preparations fixed to the slide with paraffin keep the colour longest. It is useful to employ a combination of eosin and methylene blue, as the eosin stains the hæmoglobin of the red corpuscle, whilst the methylene blue stains the parasite. It is better to use the dyes combined than one after the other. Chezynsky's formula I have found the best. It is made by mixing 20 parts of ½ per cent. solution of eosin in 70 per cent. alcohol with 40 parts of saturated solution of methylene blue, and 40 parts of water. Filter some of the solution into a watch-glass, and place the cover-glass on it for a quarter of an hour to twenty minutes, if an incubator temperature of 98° F., is used, or from half an hour to two hours, according to the time of year, if at the ordinary room temperature. But it is easy to watch the progress of the dye by rinsing the cover-glass in water and examining it under a low power, and putting it back again in the dye if necessary. Dry and mount as directed when Löeffler's solution is used. Successful preparations of this kind are satisfactory and conclusive. The young amœbæ are seen as small blue bodies in the eosin-stained red corpuscles, and when further advanced the pigment granules stand out very clearly in the blue. The sporulating bodies are seen well, each spore being distinctly stained, and the central pigment is distinct.

Dried preparations can also be successfully used for hæmatoxylin staining, which very clearly brings out the nucleolar elements of the parasite, but for ordinary diagnostic purposes methylene blue staining is best.

The accompanying drawings *(Plate I)* illustrate the appearances which the parasite presents in stained preparations, and its size, as compared with that of the surrounding red corpuscles, when observed with a magnifying power of 1,000 diameters. *Figs. A* to *G* show all the stages of the tertian parasite.

Fig. A shows the young amœba shortly after it has fixed itself in the parasite.

Fig. B shows the second day's growth of the parasite, the pigment being well seen. The affected corpuscle is characteristically larger and paler than the surrounding unaffected red corpuscles. This remark also applies to *Figs. D, E, F, G.*

Fig. C shows a corpuscle attacked by no fewer than four parasites.

Fig. D illustrates the varying shapes of the parasite. It shows about the same stage as *Fig. B.*

Figs. E and *F* represent the appearances seen on the day of the paroxysm, before sporulation has begun.

Fig. G shows sporulation completed, coincident with the paroxysm.

Fig. H shows the appearance presented by one of the crescent bodies in a preparation which is stained with eosin and blue. The parasite drawn for this figure had lost the crescent form, but it is recognizable by its shape, size, colour and the central pigment.

Figs. I to *N* illustrate the effect of methyl green, when used in the manner described in the text.

Figs. I and *K* represent two crescent bodies.

Figs. L, M and *N* show various appearances presented by the quartan parasite when stained by this method.

Fig. L shows the sporulating stage of the quartan parasite.

Fig. M shows in one of the corpuscles the young amœba as a round, green spot. In an adjoining corpuscle a more fully developed stage of the parasite is seen with peripheral pigment. The case was a double quartan, and two generations of the parasite are visible in the same preparation at the corresponding stages.

Fig. N shows a parasite intermediate in its development between the two stages represented by *Fig. M.*

[I am indebted to my friend, Dr. E. E. Henderson, for his kindness in preparing the drawings accurately, and to scale.]

REFERENCE.—1"Lancet," July 6, 1895.

Diagnosis of Toothache and Neuralgia of Dental Origin.

BY

HENRY SEWILL, M.R.C.S., L.D.S.

NEURALGIA—pain at some point distant from the seat of injury or disease—is one of the commonest of complaints. The most frequent seat of neuralgia is the region supplied by the fifth nerve; and the most common cause is to be found in abnormal or pathological conditions of the teeth.

The frequency with which such conditions of the teeth give rise to neuralgic pain is easily accounted for. Each jaw holds sixteen teeth, and every tooth contains a pulp composed of delicate nerve fibrils, vessels, and cells. This pulp is enclosed within unyielding ivory walls where, unless the chamber be fully opened as a consequence of caries, swelling is impossible, and whence exudations cannot easily escape. Inflammation of the dental pulp is accompanied by tension more extreme than occurs in any other part; and the comparative severity of local pain as well as the frequent excitation of distant pain is thus explained. Although the tension accompanying inflammation around the roots of teeth—periodontitis—be not so exceptional it also is severe, the roots of the teeth being encased within more or less dense osseous alveoli.

Neuralgic pain due to dental disease may be as intense as that arising from any other cause; it may occur in paroxysms with intervals of complete freedom; it may be regularly periodic, and there are no symptoms which serve to differentiate neuralgia due either to remote or constitutional causes from that set up entirely by local disease. Other recognizable sufficient cause not being apparent, examination of the teeth cannot therefore be omitted in forming a diagnosis.

Other diseases besides those of the teeth may involve the fifth nerve and give rise to neuralgia. The nerve or its branches may be compressed by a tumour or aneurism; or may be affected by inflammation, exostosis, or necrosis of the bony canals through which they pass. Tumours of the antrum may be a cause. A case of

myxoma, springing from the infra-orbital nerve filling the antrum and invading the orbit and giving rise to intense neuralgia and toothache, is recorded by Mr. Bland Sutton[1]. Inflammation and empyema of the antrum are mostly attended by severe neuralgia and toothache, and such pains may also be due to inflammation within the ear or orbit. Pain from nodes of the skull is often neuralgic in character. Neuralgia in many instances also occurs without existence of any lesion discoverable by the most minute examination. It is doubtless due frequently to unrecognizable pathological conditions of nerve centres, ganglia or great trunks. In some instances where examination *post mortem* has been carried out, well-marked histological changes have been observed in the Gasserian ganglion and very slight changes in peripheral branches.

The fifth nerve possesses widespread relationship not only with cranial but also with visceral regions. Irritation in any region is apt to be projected on territories deriving their nerve supply from closely-related centres, and in this way are sometimes to be accounted for reflex or sympathetic neuralgias of the fifth nerve where no local cause exists. It must be borne in mind also, that lesions of nerves not necessarily painful or not necessarily excitants of more than strictly local pain may give rise to neuralgia in consequence of disorder of the general health; and thus cases are frequently met with in which diseased teeth, previously the cause of little or no pain, give rise to neuralgia when the patient has become lowered by disease or exhaustion.

Several distinct pathological conditions of teeth are capable of giving rise to neuralgia, but among these conditions chronic inflammation of the pulp due to caries is by far the most frequent cause. Diagnosis of this condition is by no means always quite simple; and in this matter, as in any case of neuralgia, it is far from sufficient to accept a patient's assurance that his teeth are not decayed or that he does not suffer from toothache. Patients are often unconscious of the existence of disease; and teeth, not the seat of appreciable pain, are frequently excitants of distant neuralgia.

When complaint is made of both toothache and neuralgia, local conditions cannot of course escape attention.

Toothache—pain within and around teeth—is merely a symptom, not a disease, and it accompanies various conditions which will be presently referred to more fully. It must not be forgotten that teeth, the seat of pain, may be perfectly sound, or if decayed may not be the cause of the pain localised in them. The pain may be neuralgic or reflected from some more or less distant tooth.

True facial neuralgia not associated with dental disease is commonly accompanied by violent toothache. In such cases patients not infrequently undergo extraction of many sound teeth without relief. An operator who without discrimination extracts teeth which patients point to as the source of suffering, must in a large proportion of cases draw a wrong tooth and often sacrifice a sound one. Extraction ought never to be performed even in inveterate cases, unless at least a reasonable suspicion is established of the existence of incurable dental disease. In many phases dental disease is amenable to conservative treatment; and to extract a tooth under such circumstances must be reckoned an unjustifiable if not barbarous procedure. Toothache in the majority of instances is due to a local cause, although this is very often not discoverable without careful examination of all the teeth. Where teeth in various conditions of decay are present, it will occasionally be found that the source of pain lies in those least broken down.

In teeth in the later stages of decay the pulp will mostly have been to a greater or less degree devitalized or destroyed by inflammatory changes; whereas in those in which caries has more recently penetrated to the centre, the pulp will be found entire and with undiminished sensibility.

In dealing with cases of neuralgia, it is necessary that every tooth be minutely examined and tested. Fine steel curved dental probes must be used to discover and try the depth of carious cavities. A small opening in the enamel will often lead into a cavity in which the dentine if not destroyed is softened and disorganised as far as the surface of the pulp; and this is in consequence inflamed. Cavities hidden in interstices and on approximal surfaces invisible to ordinary examination, must be sought for. The difficulty of detecting decay affecting surfaces of teeth in close apposition is increased where jaws are crowded. The crown of a sound tooth is often tightly wedged against a carious neighbour, completely preventing a view of the cavity and even rendering approach impossible without the cutting of a way. Some of the worst examples of this kind associated with neuralgia are found in connection with the lower wisdom tooth. This tooth often comes forward obliquely from the base of the ascending ramus, with its crown tilted forward and the anterior edge impinging upon the neck of the second molar close to the gum. In the V-shaped space so formed food constantly lodges, and decay begins on the posterior surface of the molar. As decay progresses, the crown of the wisdom tooth advances and occupies the cavity. At length the nerve of the molar becomes exposed and

inflamed, and toothache or neuralgia supervenes. It is sometimes only by pressing back overhanging folds of mucous membrane and by use of dental mirror and probe that this condition can be discovered; and patients suffering neuralgia from this cause are commonly unaware of the condition.

Cavities along the necks of teeth by the gum margin and extending below the gum, and in other positions in which food is not forced during mastication, are often invisible to casual observation, and are not seldom unknown to patients who may thus believe they have no decayed teeth.

To help detect offending members of the set the teeth may be percussed one by one. A slight smart tap or two with a steel instrument upon the masticating surface may reveal an extra sensibility in one or other tooth, which by further scrutiny may be found the seat of disease. A fine jet of cold water thrown by a dental syringe is a good test—each tooth under trial being so far as possible isolated by a fold of napkin. This test, as also probing when the probe touches the nerve, will not uncommonly excite a paroxysm of neuralgia; and this, although the pain is regrettable, is often satisfactory in establishing a diagnosis.

Filled teeth, and especially those with large metallic stoppings which appear nearly to approach the pulp, must be carefully scrutinised; for it often happens that the pulps of such teeth pass into a state of irritation, congestion, or inflammation. Where doubt exists, especially where hyperæsthesia is present, stoppings must be removed and further examination carried out. The mass of pulp in a molar will sometimes be found dead, whilst the nerve in one or other root canal retains its vitality and is inflamed.

Impacted lower wisdom teeth—that is teeth wedged for want of room between the ascending ramus and the second molar—may, although free from caries or inflammation, be a cause of neuralgia. This seems explicable only on the supposition that the root of the wisdom tooth in some way presses upon or interferes with the inferior maxillary nerve. Section of the lower jaw shows how close to the nerve canal lie the lower wisdom tooth roots. In one case of severe neuralgia and "ear-ache," in which I extracted an impacted lower wisdom tooth (now in the Museum of the Odontological Society), it was evident that the trunk of the inferior maxillary nerve had traversed a foramen in one root and a deep groove in the other. Complete anæsthesia of the parts supplied by the nerve immediately followed the operation, but sensation returned gradually in the course of months. Several cases of a like kind have been recorded,

but in none has the trunk of the nerve seemed in such close relation to the tooth.

Inflammation of the dental periosteum is not a common cause of neuralgia, and as the teeth are always tender, slightly raised in their sockets, and loosened by the swelling within the alveoli, it is not likely that this condition, except in an extremely chronic phase, can be overlooked. Cases where exostosis affects roots are more often associated with neuralgia. In these cases the teeth have usually been carious; the pulps have been destroyed; the teeth, perhaps, filled. Long-continued congestion and slight, very chronic inflammation about the roots leads to exostosis—the roots becoming studded with nodules or enlarged at their apices by deposit of cement. In most instances teeth so affected will show extra-sensibility under trial, but I have seen a great number of cases in which this was not apparent, in which the teeth did not ache, and in which the teeth being ultimately extracted, were found the seat of large exostoses—and proved to be the cause of neuralgia. Broken-down roots, the seat of exostosis or necrosis, are often buried in their sockets; their position being as a rule marked by a minute fistulous tract in the gum which has overgrown them.

As age advances the teeth become worn down by mastication. The enamel is first worn off, next the dentine suffers, and in time the pulp would be laid bare were it not that it undergoes calcification *pari passu* with the slow wasting of the tissues. In most cases the exposed dentine becomes hardened, polished, and insensitive; but it often remains more or less sensitive throughout or develops extra-sensibility at some period; and the teeth may pass into a condition of general hyperæsthesia, in which sudden slight pressure, as in biting on the masticating surface, will inflict a severe pang, or exposure to hot or cold fluids bring on an attack of pain. Teeth so affected are common excitants of neuralgia. On examination after extraction the pulps are usually found extensively calcified, the new tissue being scattered in isolated nodules throughout, and the remaining pulp showing traces of extremely slight inflammation. Badly-fitting artificial teeth are capable of causing neuralgia. This they may do in several ways: by pressure upon the gums; by causing erosion of tooth surfaces; and by giving rise to strain and tension upon remaining teeth.

Head[2] has described most minutely the various distant areas to which pain may be referred in dental disease. This description is too long for quotation here, and practically it is enough to bear in mind that although teeth nearest the seat of pain should be first

suspected, disease of any one tooth seems capable of exciting pain at remote parts of the head, face, and neck.

The age of patients is often a guide to diagnosis. Facial neuralgia in the young is in the vast majority of cases due to dental disease, or to other similar local irritation. Neuralgia of other origin and inveterate "tic" are extremely rare before middle age.

In neuralgic pain about the ear, in "ear-ache," and neuralgia around the orbit, the cause will often be discovered in dental disease; lower molars and wisdom teeth in the former, upper incisors and canines in the latter, being commonly the teeth at fault.

Neuralgic pain due to dental disease is usually, although by no means invariably, superficial, of a plunging, lancinating or burning character, following the course of nerve branches through the skin. When deeper-seated pain is complained of, other causes must be the more particularly considered; but patients are often not able to localise pain sufficiently for guidance in the matter of superficiality or depth below the surface.

To narrate cases of neuralgia of dental origin would be tedious. They are to be found in numbers among the out-patients in every hospital, and cases present themselves almost daily in dental practice in which patients have suffered for more or less prolonged periods from neuralgia, and have been medically treated for that affection, whilst the sole cause lies in dental disease; the proof being found in the fact that on the removal of that cause the attacks of pain at once cease, and do not again recur.

REFERENCES.—[1] "Clinical Soc.," 1889; [2] "Brain," No. 67.

The Remedial Value of Cycling.

By OSCAR JENNINGS, M.D., M.R.C.S., PARIS.

THERE can be no doubt that many serious chronic affections may be treated with great advantage by the judicious use of exercise and movements, and it is equally certain that these methods have not hitherto received all the attention they deserve from practitioners. We shall not stop to enquire into the reasons of this neglect, probably due partly to our early hospital training, which accustoms us to meet with cases where rest rather than exercise (although the two are not incompatible) are necessary, and partly to our subsequent experience of the little success recommendations of hygienic measures obtain with the public. It is sufficient to say that a belief exists to which the profession would seem to subscribe, that the more serious a malady, the more indispensable it is to resort to purely medicinal (*i.e.*, pharmaceutical) remedies. The orthodox practitioner is traditionally a writer of prescriptions, a curer by drugs, and although he may frequently have given identical advice, the patient will only pay attention to diet when under the care of the homœopath, and consent to resort to exercise as the main treatment when so directed by some fashionable empiric.

Perhaps another and more legitimate reason for the neglect of this means in serious illness has been that, unlike the Romans, who possessed a suitable movement-cure for each disease, most of our exercises hitherto have been hygienic rather than remedial. Although well adapted for the maintenance of health and for restoration from slight departures from it, our sports and pastimes are unfit, as a rule, for the broken-down and feeble. They are too violent or too fatiguing, too monotonous, and therefore incapable of taking the patient out of himself. Some, on the other hand, are too absorbing to the attention, it being a strange but well-ascertained physiological law that a strong concentration of the will is as exhausting, if not more so, than muscular efforts. The only ways of applying movement suitable in all instances, from the case of advanced heart disease, where an imprudent effort might cause death, up to the most active degree of muscular contraction, have been the Ling and Zander methods, but these require either specially-educated attendants or elaborate machinery, and are therefore out of the reach of those who cannot reside in the vicinity of an institution.

An extensive experience of cycling has convinced us that in this popular pastime we now possess an exercise which *when properly carried out* can be graduated to present all the advantages of the methods alluded to. It is, moreover, unique in that it can be made to bring about a greater circulatory irrigation and combustion than any other exercise, but with a minimum of fatigue which in all other cases is proportional to the work done. It presents, too, the great superiority of being practised in the open air, and whilst requiring a sufficient degree of attention to prevent monotony, it does not necessitate that concentration which may give rise to exhaustion.

The general consensus of opinion of those who have tried cycling, as an hygienic exercise, is one of enthusiastic approval. Some observers, however, speak of evil consequences, and the severest condemnation of it as an exercise for women has been pronounced by more than one medical authority. The question of its value for women will be discussed further on. As regards other discrepancies, they may be accounted for partly on the ground that those who are in favour of cycling have a practical knowledge of the question, whilst those who have thought fit to warn the public against it have, as a rule, only possessed a theoretical acquaintance with it. Indeed, instances of the kind have come under our notice, the author of a book on the subject making in his first edition an absolute exception from his general recommendation, in the special case of women, which he subsequently acknowledged to be practically uncalled for. A well-known alienist, too, in a recent congress, has also uttered a solemn warning against the disastrous effects that are likely to ensue in the coming generations. After making due allowance, then, for exaggeration, it may be concluded that, as in the case of the knights who quarrelled about the colour of the shield, both are right, only advocates and condemners look at the question from different points of view. As might be foreseen *a priori*, and as is proved by hosts of attestations, *moderate cycling** is an admirable exercise. But

* I italicise this expression, for although in my little work on "Cycling and Health," I scarcely ever use the word cycling, except in conjunction with the qualifying *moderate*, this detail has been overlooked by most of my critics, who, as a rule, although treating me most kindly, sum up their appreciation by saying that the author recommends cycling for all human ills. As a matter of fact although for some I do recommend "cycling," to others it is the graduated use of the cycle that I counsel, just as Oertl prescribes progressive hill walking, which by no means signifies unrestricted mountaineering. In the 1895 supplement of that most important and useful work of reference, "Good Books," whilst looking for further publications on the subject, I was equally surprised and gratified in finding my own contribution not only catalogued but criticised. "By a writer," it says, (I am quoting from memory) "who considers cycling synonymous with health." Not cycling which may be carried to excess, but rational and moderate cycling.

misuse may evidently be followed by evil consequences, and consequently those who have reported baneful results are no doubt correct in their statements, although when properly understood they do not militate in the least against cycling in a rational manner. The outcome of several enquiries addressed by us to probably five hundred riders, mostly consisting of medical men, clergymen, schoolmasters, engineers, and officers, has been that whilst a few isolated correspondents have anticipated the possibility of different evils from "cycling," in no single instance has anyone communicated to me an actual case of harm from "rational cycling." Still more remarkable is the fact that even when apparently carried to an excess that has never been parallelled in any other sport, bad consequences are comparatively unusual. Whilst then admitting the possibility of spinal vibration, perineal pressure, deformity of the spine and limbs, etc., in those who race and scorch, the moderate rider has nothing whatever to fear from cycling as an exercise. I shall endeavour, moreover, to show that in the tricycle and bicyclette we possess kinesitherapeutical machines which may be turned to best account in the treatment of grave disease.

Exercises are of two kinds : passive and active. The former comprises massage and those of the Ling and Zander movements that are produced by the assistant or the machine without effort on the part of the subject. By carefully graduated degrees, personal exertion, that is to say, resistance on the part of the patient, may be incorporated into the movement until it is increased to one requiring the greatest force.

Active exercise may be divided, according to Lagrange* into three principal classes : those requiring (*a*,) strength ; (*b*,) speed ; (*c*,) stamina. They all have in common that they increase the circulation of the blood, and the rapidity and depth of the breathing, thereby causing a free irrigation of the tissues with highly oxygenated blood, the best means of removing the cause of half the chronic diseases in the nosology. For whether uric acid be or not the origin of all the morbid conditions Dr. Haig attributes to it,† it is certain that, in the greater number of chronic diseases, there does exist an accumulation of acid and other effete matters in the insufficiently aërated blood and tissues. There is a general want of tone of the tissues and organs, and the puffiness and congestion of the integument is an accurate indication of what obtains in the internal viscera and the organism generally. An over supply of food,

* "Physiologie des Exercices de Corps," (International Scientific Series).

† "On Uric Acid as a Factor in the Causation of Disease," by Alexander Haig, M.A., Oxon., M.D., London. Churchill.

with imperfect combustion from want of exercise and languid action of the lungs, promotes a condition of atony which brings in its train hypertrophies, dilatations, deviations, deposits, and metabolic perversions. Theoretically, the effects of simple exercise cover all these indications.

To understand the special value of cycling, let us compare its action with that of other movements.

It may be laid down as a general rule that the amount of movement performed, which is the same thing as saying the increase of the circulation and oxidation, is in proportion to the work done or effort exerted. This, according to Lagrange, is measured by the carbonic acid produced, and to a certain extent by the resulting fatigue, which has its strict co-efficient in the excretion of urates. Fatigue, however, has another factor, being immensely increased by the intervention of the will, movements that are automatic giving rise but to little, those requiring strong voluntary effort being most exhausting. The heart, for example, which is entirely independent in its action of the will, does work equal to the raising of forty kilogrammes to the height of one centimètre at each beat, never resting and never tiring. No voluntary muscle could stand such an expenditure of force without speedy failure.* Exercises requiring the exertion of strength are more fatiguing than those of speed, both on account of the mental concentration and from their interference with the freedom of respiration, the suspensions of breathing, and closures of the glottis which accompany great exertion, hindering the free entry of oxygen, and promoting simultaneously carbonic acid repletion. It happens in many sports, therefore, that the effort necessary to induce a useful activity of the circulation is beyond the subject's strength; moreover, in a gouty individual, the first effect of the remedy may be an attack of the trouble it was intended to combat. An excess of urates which might have been prevented by more gradual and less tiring exercises, brings about a precipitation of uric acid on the *locus minoris resistentiæ*, leaving the sufferer less

* It is this automatism that we can find the only rational explanation of the seeming impossibilities performed by cyclists, and which, having now become matters of daily experience, cease to cause astonishment. How is it possible to explain otherwise the endurance of the cyclist who rides a thousand kilometres without sleep, and without apparent, or at any rate, excessive fatigue. Is there any record in any other sport of active exercise being kept up without intermission for seventy hours? The only feasible explanation is by the formation of automatic centres, which act all the more energetically under the influence of the semi-hypnotised condition that the regular monotonous movements of the record-breaker induces. For if we have claimed for cycling the advantage of not being monotonous, this must be understood only of rational riding with a view to health and pleasure, and not record-breaking and scorching.

than ever inclined to try unusual methods. These drawbacks and accidents are entirely prevented in the Swedish methods, and would disappear by steady perseverance in any suitable form of movement. Nevertheless, they often constitute a sufficient obstacle to the adoption of active exercise, by the very subjects who would otherwise have derived the greatest benefit from it.

It has been already said that cycling can be adapted to these requirements of the enfeebled invalid. In other words, it can be made to conciliate extensive movement, producing free irrigation and oxygenation with but slight effort or subsequent fatigue.

In cycling, we have a combination of the active and passive forms of movement, varying in proportion according to the circumstances under which it is practised, and so suitable to the most different requirements.

To take for example a machine mounted by a rider on a perfectly level road, the force necessary to propel it twenty yards is infinitesimal in comparison with that which is required to walk the same distance. After the preliminary impetus is given, the effort necessary to keep the machine in motion at the pace that requires the least effort, is very trifling, and yet the legs are being subjected to a rapidity and extent of movement as great if not greater than in running. That they are not, however, doing corresponding work, is proved by the fact that they tire but little, and by the absence of breathlessness, which is the physiological manifestation of the accumulation of carbonic acid, the exact equivalent and measure of muscular work, notwithstanding that, in accordance with this law (*i.e.*, carbonic acid being the equivalent of muscular work), breathlessness is much more speedy in its onset in exercises requiring the active intervention of the lower extremities, on account of the greater relative volume of the muscles.

In cycling, not only the lower extremities, but all the muscles of the body may be thrown in movement, but that the work done is trifling in proportion to the extent of the movement is proved by the state of the wind.* As it is impossible for mechanical action to be absolutely lost, what is not used for the propulsion of the machine is utilised as

* The blood also affords direct proof of this fact. According to Lagrange, the blood issuing from muscle during work is *venous*. We accidentally observed the extraordinary effect of cycling which not only does not render it venous but exactly the reverse. A friend who was under treatment for the morphia habit, took in our presence one morning before cycling a hypodermic injection. The slight hæmorrhage which resulted was of dark oozy blood. A couple of hours later a new hæmorrhage, which would have been of the same character as the preceding had ordinary exercise been taken, was of a most bright and vivid scarlet. Since then we have frequently noticed the same thing.

internal heat and its correlatives. There being no hindrance to respiration resulting either from the accumulation of carbonic acid or from the repeated closures of the glottis, and suspensions of the breathing that accompany forced exercise, we have on the one hand a free entrance of oxygen and consequently a free circulation in the lungs and an eased heart, whilst the peripheral circulation is actively promoted by the increased muscular movements and the active combustion in the tissues resulting from the increased heat and an abundant supply of oxygen. It is like a furnace with the blower on. The blood is strongly drawn to the periphery by an unusual *vis a fronte*, and the heart instead of having to pump against a stagnant circulation, has only as it were to "follow on."

What has been said applies of course only to moderate cycling under favourable circumstances, with a good machine and on level roads. But if an exercise is required for working the muscle, the cycle will do as well and even better than anything else, either by increasing the speed, the choice of progressively hilly roads, or riding against the wind; but with increased effort comes increased work, and, in proportion to its efficacy in this direction, its hyper-oxidising value will be lessened. We have always maintained that the great value of cycling resided in the possibility of varying the degree of effort expended from the feeblest passive* to the most extremely active movement. Dr. Lucas-Championnière, in a recent lecture before the French Association for the Advancement of Sciences, confirms this assertion. "*Elle est essentiellement mesurable*," he says, "*a tous les moments. Elle ne donne un exercice de force que sur les rampes ou pour la vitesse. Vous pouvez mesurer son action, vous pouvez doser progressivement vos pratiques d'excitation musculaire, et ce fait de la progression et du mesurage en fait le veritable exercice de la femme.*"

Cycling, then, is not merely an exercise, it is a very special exercise, which, when properly applied, is different from any other, first, in being graduable from the feeblest passive to the most vigorous active movement; secondly, by flushing the circulation with hyperoxygenated blood instead of leading to venous accumulation in proportion to the energy with which it is carried. This is, as we have shown, because it is not necessarily toilsome, and for this reason, as well as on account of its automatic character, it is distinguished

* Beginners will sometimes feel great fatigue after a ride which represented almost *nil*, as regards work. This is due partly to the fact of new muscles unaccustomed to exercise being brought into play, but chiefly to the unnecessary expenditure of energy through clumsiness, and to the exhausting effect of mental apprehension.

thirdly, when compared effort for effort with other exercises, by the subsequent absence of fatigue, which renders it so exhilarating and tonic.

If we take a broad general view of the pathology of chronic disease, it will be recognized that for the metabolic perversions, the deviations of nutrition, the accumulations of the products of insufficient oxygenation, or of the toxine secretions of micro-organisms, we could not devise a better treatment than abundant irrigation of the tissues with richly oxygenated blood. It is evident that no better restorer of tone could be found than the removal of the atonising *materies morbi*, which, whether as cause or effect, is at any rate the chief factor in keeping up the pathological condition. Even in diseases which result from specific organisms, such as syphilis, malaria, and others, this same hyperoxygenation is the most natural method of cure, inducing powerfully as it does the requisite cryptogamic heteromorphism, *i.e.*, attenuation.

We shall divide the different affections in which cycling is useful into classes, according to the predominance of their most noticeable factors, but as it is often difficult in chronic disease to say not only what is the original cause and what the secondary effects, but even which is the predominating factor, our classes of course will be merely arbitrary and without any pretence to completeness, only comprising the different affections of which we have had personal experience. It stands of course to reason that analogous conditions would be amenable to the same treatment.

One of the most important groups of chronic disease comprises those in which the chief trouble is deficient combustion and its consequences, the formation of uric acid, whether as a primary perversion of metabolism or as the result of disturbed function elsewhere. Besides the well-defined conditions of gout, rheumatism, obesity, diabetes,* albuminuria, etc., three-quarters of the slight departures from health which come under the general expression "out of sorts," have no other cause than visceral, and especially portal hyperæmia, the result of an excess of uric acid. It is no doubt by capillary stasis that the atonic condition commences, which, little by little leads to the hypertrophies and dilatations, which with the exudations and hyperplasiæ, constitute the majority of these visceral affections. Uric acid is often responsible for preventing the spontaneous recovery, and for aggravating the morbid conditions of any

* The only point upon which all observers are agreed, observes Dr. Haig, as regards the pathology of diabetes, is congestion of the liver and portal system. Capillary dilatation is caused by acids; tonic constriction by alkalies; hence the rationale of Vichy.

abdominal organ that once deviates from health. Hence chronic congestion of the liver and kidneys with their resulting dyscrasiæ, gastro- and enteroptoses, with their reflex neurasthenic consequences, atonic hypertrophy of the uterus, and its inevitable mechanical effects. In all these cases it is evident that the requisite treatment is that by which tone can be restored to the tissues, the accumulation of effete matters removed, and the sluggish habit of the circulation corrected. What better means to this end could be devised than the free irrigation of the tissues with rich arterial blood, capable either of supplying the necessary materials for building up atrophied parts or of promoting the resolution of morbid deposits. Is it necessary to ask the practitioner what drug or combination of drugs will meet these indications?

For examples of the efficacy of cycling in this direction, the reader can consult my "Cycling and Health."* A few cases which have not been published hitherto will show that we are dealing with no ordinary agent. The first is contained in a letter from the patient, from which I extract the following: "I am now in my fiftieth year. Up to four and a half years ago, when I commenced cycling, I was almost always ailing, particularly in the winter. My business, that of an engraver, being sedentary, my temperament nervous, my liver sluggish. Every winter in the doctor's hands for one thing or another. One day he told me to get a bicycle—'It will do you more good than physic.' I got one, but shaped badly; I was too nervous, and was weeks before I could mount the machine with any degree of confidence. He encouraged me to persevere, and I don't think I have paid him a sixpence on my own account since. I had a patch of eczema on my right leg for about four years when I started, and it cleared off in two. I now ride all the year round, when the weather and roads permit. . . *I feel to be enjoying the only youth* I ever had, and purpose riding as long as I can get in the saddle." It may perhaps be objected that in this case there was not very much the matter with the patient, and that the achievement was not a very great one. It was simply chronic bad health and an absence of brightness, but this is precisely the condition which no drug can cure, and which only goes from bad to worse, as it is subjected to successive medicinal treatments.

The next is one that came under my own observation a little more than a year ago, and is not only remarkable for the *quasi* miraculous nature of the result, but from the fact that when the exercise was suspended, which circumstances rendered almost unavoidable, all the

* "Cycling and Health," Iliffe & Son, 1893, Second and Enlarged (English) Edition.

old symptoms returned. The patient was a retired officer who chanced to be recommended to me after trying in vain every possible treatment advised by the most eminent authorities. The diagnoses previously made had varied but slightly, different consultants having considered him as suffering from enteritis, gastro-enteritis, chronic colitis with atony. The evidences of functional derangement were most numerous, but the chief symptoms might be divided into three groups—pain, constipation, dyspepsia. The pain was referred to two places, (*a*) at the pit of the stomach after food, which became of the most acute character if any departure from the necessary conditions of diet was made, (*b*) in the groins on either side. This last varied from a simple discomfort to a colicky pain, and was believed by the patient to indicate the situation of two obstructions which he looked upon as the chief cause of his constipation, inasmuch as gentle pressure and rubbing facilitated the passage of fæcal matter, and helped to remove discomfort. The constipation was so obstinate that this alone had compelled him to relinquish his profession. The act of defæcation took two hours every morning, and constituted a veritable daily accouchement—the scybalous matters, sometimes mixed with what the patient termed gelatinous bodies, membranes, and blood, having to be disengaged mechanically. This, of course, rendered it impossible for him to perform the duties of an officer. The dyspepsia was accompanied by vertigo after meals, nausea (not to the extent of vomiting), and pain aggravated by a great many ailments. Neither coffee, tea, liqueurs, spirits (diluted or otherwise), were tolerated. Milk by itself increased constipation, but not when taken with chocolate. A very small quantity of wine only could be taken, largely diluted with water; but the chief privation in respect to drinking resided in the fact that no cold liquid of any kind could be taken at all. Every drink required to be warmed or diluted with hot water. If this rule was transgressed, immediate colics resulted, which, however, increased the constipation instead of being followed by diarrhœa.

This symptom dated from three years, the others having progressively developed since their inception twenty-five years ago after the war. In his letter to me describing his symptoms, he says: "That he would consider himself relatively very fortunate if in default of a cure, which is perhaps impossible in a complaint of twenty-three years' standing, he could be restored to the faculty of drinking cool, and obtain an attenuation of the constipation." As regards digestion of solids, I have a long list of what he could not eat; what remained available consisted of a few simple roast and boiled meats and a few vegetables. To complete the *tableau*, he was

subject to what he termed arthritic manifestations in the joints, and herpetic troubles on the skin, a congestive state of the head, palpitations of the heart, and dyspnœa. When I first saw him he was suffering from an herpetic conjunctivitis. In this case it might be said that there was too much for it all to be organic. No doubt many of the symptoms were functional, and exaggerated in their intensity and tenacity by the patient's constant pre-occupation on the subject. It was for this reason that besides cycling and the administration of Alet-water (which has a remarkable action in chronic constipation not explainable by its chemical constitution, which is almost *nil*), that I passed great galvanic currents through the head ; but a state of constipation which had lasted twenty years, and that had led an exceptionally brilliant officer to give up his career, the intestinal atony existing to the extent of requiring from two to three hours' management every morning, coupled with the dyspepsia and the external evidences of the uric acid diathesis, constituted real, very grave, and very tenacious symptoms, as was proved by the want of success my predecessors had met with in dealing with the case. To conclude, in one month the patient had obtained all that his dearest hopes had aspired to. The symptoms had progressively mended, and when he left Paris, he was able to complete his stool in one short sitting, the fæces being of normal consistence. He was able to eat and drink anything that was not manifestly indigestible, and he could take all liquids cold. He assured me that he was about to apply for active service. That the cycle was the chief element in this miraculous restoration, which exceeded anything of the kind I ever witnessed, there was no doubt. In the course of his progression towards recovery, the discomfort after eating, etc., only went away by degrees, but as soon as he had become accustomed to his cycle, a half-an-hour's spin was sufficient to bring about what he termed a *détente* whenever he was feeling uncomfortable. The sequel is instructive. On his return to the country things continued well for a time ; but with the beginning of the bad weather cycling became very difficult, and there being no roads in any direction that were not hilly in the immediate vicinity of the town, he was unable to ride five miles without returning exhausted. This was very unfortunate, for steep hills were really beyond his capacity, and although he might have obtained exercise by pushing his machine up hill and riding down, the first would have exceeded the limits of a graduable programme, the second would not even have attained to it. Each successive letter related a relapse in one direction or another, and the last received a few months back, stated that of all that had been gained, nothing

remained except the possibility of drinking cool, and even in this respect there had been a great falling off, it being sometimes necessary to slightly warm his liquids. His only hope since he had been compelled to renounce cycling entirely, was in a projected velodrome.

Another case, showing the value of the cycle as an oxidising agent, is that of a professional *confrère* who called upon me a couple of years since to exchange ideas on the subject, and who left me under the impression that it had relieved him of a functional heart trouble of gouty nature, which had arrived at such a pitch that he was no longer able to sleep otherwise than in an arm-chair, and which was threatening a fatal termination. The following is the verbatim translation of the letter he sent me in reply to my query: "The history of my malady," says he, which turned out to be an anomalous malarial intoxication, developing itself in an arthritic subject, "is long and curious from different points of view, particularly on account of its vague and undecided nature, which left the diagnosis of men of the highest capacity as clinical observers, in doubt. It would be too long to relate it, in detail, here; but I will give you the case as briefly as possible. Although born at Lyons, and of robust health, I have always felt tried by the moist and depressing climate of the region, and I had, at an early age, marked tendencies to catarrh and rheumatism. For a time the holidays passed either in the country in the open air, or in travelling, enabled me to react, but once established as a medical man, holidays became less frequent and shorter, and of late years I was only able to take a few days of recreation and exercise. So it was that I became weaker little by little, and lost progressively all strength and energy until the practice to which I had been accustomed for fifteen years, became impossible. I was obliged to change my mode of life entirely, and passed the summer at a thermal station, the winter in the south.

"Arriving in Savoy in 1875, the air seemed to set me up at first; unfortunately the summer was remarkably wet and rainy. I was obliged to exert myself a great deal, and as a defective lodging did not furnish me with proper indoor *circumfusa*, my illness again increased.

"My transfer to the South in October did not improve matters; on the contrary, I became worse and worse, and finally reached a state of annihilation of which it is impossible to have any conception, when it has not been experienced. Even the thought of making an effort was terrible; everything was fatiguing, not only acting, but speaking,

hearing, and even thinking. The face was pale yellow, puffy and cachectic; there were pains and discomforts of all descriptions. My *confrères* were surprised to find no organic lesions, and were unable to call my complaint by any other term than 'progressive pernicious anæmia.' Their efforts were powerless, and they seemed to have no other resource than to wait for the fatal ending which did not appear distant. Suddenly, without any appreciable reason, the crisis passed, strength returned, and a transformation took place. Little by little I regained a semblance of health, which terminated, however, at the end of two months, in a new crisis—this time with grave cardiac troubles. This lasted for six months, when, to the astonishment of all, especially of my professional brethren, who, with one exception, had unanimously condemned me, I regained a condition of health which, although necessitating the greatest care, enabled me to resume my occupations in both stations.

"This lasted until 1882, when after some exhausting causes, I fell into a new crisis, even more serious cardiac troubles, generalised œdema, which, it may be remarked in passing, only disappeared under the influence of quinine and the mineral waters of Brides. In short, I was then just as ill as it is possible to be, and on one occasion especially I thought that the end was at hand. Notwithstanding this, I again recovered, quinine having worked miracles, and at the end of four months I had regained an appearance of health. But how precarious was my real condition! No strength, no resistance, the least impression of cold caused me to keep my bed for several days. I had now, moreover, gastric and gastralgic troubles of a most uncomfortable nature. Quinine still helped me, but in spite of it I was always weak and ailing, and feared the return of a new attack, which certainly would have been the last.

"I had the conviction that exercise in the open air was useful to me, and I took it as far as my strength allowed, but I was heavy, the least walk tired me and covered me with perspiration.

"Just then cycling began to become generally popularised, and I at once thought it might be favourable to me. I wished to try it, but I hesitated at first, as it seemed suitable only for the youthful, and I asked myself what appearance a heavy, grown-up man of serious character would cut on a machine. Finally, having heard that several colleagues had tried it at Vichy, and had found it to their taste, I decided to make a trial myself.

"The first days I had scarcely strength enough to ride a tricycle; I was obliged to be supported, and at the end of ten minutes or so I had had more than enough; but from this moment I had, on getting

off the machine, a sensation of comfort, and I understood that the activity of my functions had been revived, and that I had gained a little in force and vitality. I rode again, and this feeling increased so much, that having fallen in turning at the ninth or tenth attempt, and having hurt myself sufficiently to be compelled to keep the room for a few days, the idea never occurred to me of ceasing my new treatment. I looked forward to being able to resume it; since then what shall I say? This marvellously tonic effect has not ceased to be experienced. I have now cycled for seven years; my health has been consolidated in an unhoped for manner for my age. My strength has returned, besides that my pasty complexion has disappeared; my digestion is improved, and I can come and go, and do my work. But it has become for me the necessary remedy; *I cannot do without it.* Whenever too absorbing occupations keep me for a time away from my machine, I get less well, weaker; my *malaisès* reappear, and I am obliged to return to it. But thanks to my three remedies—quinine, Brides water, and cycling—notwithstanding the terrible experiences of the past, I have a health that many of my contemporaries envy. Need I say that I have become an apostle of cycling, and sing the praises with those who owe also their health to it."

Comment is needless; I will only add that this is one of those cases which shows the unique value of cycling. No other exercise could have brought about the result obtained, for there is no other exercise in which the effect on the circulation is not accompanied, and the tonic action preceded by fatigue, which would here, in every other possible form of movement, amount to a degree of exhaustion prohibitive of any further attempt.

In the second group of cases, it is mechanical action on the circulation which predominates over the chemico-vital, and the most interesting question in this connection is its allowability in heart and arterial disease. Hæmorrhoids would also come, to a certain extent, under this heading, although they are more suitably classed from the point of view of treatment with affections amenable to the coarser mechanical effects (anatomical rather than histological) of the nature of massage, constipation, obesity, etc.

Theoretically, there ought to be no objection for the heart, which is working at a disadvantage, to an exercise which at the same time diminishes the two resistances which it has to overcome in the lungs and in the periphery, and this is precisely the effects we have shown cycling to have in a peculiar degree. Experience has shown that, providing reasonable limits are not overstepped, cycling is not

only free from the danger of causing heart disease, is not only an allowable exercise, but is indeed a useful mode of treatment. A recent speaker at a medical society points out what I maintained five years ago (see "Cycling and Health,"), that cycling progressively up moderate hills is as good in principle and far more pleasant in practice than the fashionable method of Oertl; and the examination of a number of cyclists by Dr. Hammond, shows that the organic change induced by this exercise is a compensating hypertrophy without dilatation, which will become the heart of the future, if the present fashion continues. There is good reason to suppose that occasionally the organic change may consist of the absorption of the endocarditic deposit which constituted the lesion, bringing about consequently a cure of valvular disease. M. Rousset, of Bordeaux, was refused for the Conscription for heart disease. The diagnosis of the Military Board was confirmed by the appearance of rheumatism ten years later, by which he was so crippled as to be able to walk only with a stick when thirty-five years of age. Cycling restored a hopeless invalid to a perfect state of health, the heart being so phenomenally healthy that the present writer published the sphygmographic tracing six years ago as evidence of its condition. The ex-patient rides from Bordeaux to Paris at each annual race, although he does not compete. This case is historical.

The French Academy of Medicine has also approved of moderate cycling in mild heart lesions, and there does not seem to be a dissentient voice. Dr. Herschell has called attention to its danger when practised without judgment, and he and others have quoted several instances of sudden death so resulting. In fact, the case is exactly as I anticipated seven years ago; moderate, graduated cycling is free from danger as a pastime to the heart, and may be of the greatest use to it when diseased; but on the other hand, the cycle is no talisman to prevent a man with a weak or diseased heart suffering from his folly, when he happens to make, upon it, an effort that would have caused a fatal result under any circumstances. The cases mentioned by Dr. Hammond as being suitable for cycling, are simple, degenerated conditions of the muscular fibres in dilated hearts, either with or without compensatory hypertrophy, and in slight valvular affections. Sir B. J. Richardson points out that enfeebled or worn-out arteries are a source of greater danger than feebleness of the heart. Venous enlargement, he adds, seems to be benefited by cycling.

I shall pass over the other states in which cycling benefits by its mechanical action, merely observing as a matter of curiosity, that hernia, strange to say, is benefited by cycling, as I showed by an extensive

investigation seven years ago, quoting previous observers who had noted isolated cases, and the answers of several correspondents. One medical man relates that in his own case a hernia entirely disappeared. Another, who was hereditarily disposed to it through father and grandfather, is obliged to wear a truss when taking other exercise, *e.g.*, horse-riding. The appliance being uncomfortable on one occasion, he decided to try and dispense with it, the result being that the bowel remained within the ring, and that he has always ridden a cycle without it since. This point is worthy of note, for the medical papers periodically publish enquiries on the subject, which often elicit replies from the ignorant, that cycling is decidedly improper without a truss, and not safe with it; whereas the truth is exactly the reverse.

From what has gone before, it is unnecessary to say what a high value we set upon cycling in anæmia, neurasthenia, hysteria, and hypochondriasis, many forms of insomnia, etc. To quote cases would needlessly extend this article beyond our allotted space, and the reader is consequently referred as before for numerous practical examples to "Cycling and Health." In chronic lung disease, it is of course indicated, lessening, as it does, the vascular strain, and increasing, by the general improvement in health, the phagocytic resistance of the cells when there are micro-organisms. But in what cases? According to our experience, providing the patient is not clumsy enough to make unnecessary efforts, through apprehension (and the tricycle would be selected of course in this case in preference to the bicycle), in almost any condition of chronic disease. As we would say, any person who can venture upon an ordinary warm bath, can take a Turkish bath (a mild, sensible one, it stands to reason). Any sufferer from lung disease, who can walk, may be advised to try a tricycle, with due precautions. If, when seated on the saddle and told to start, he clutches frantically at the handle bars and makes a superhuman effort to force down both feet at once, a little preliminary reassurance and instruction are necessary. Should they be ineffectual, this certainly is an unsuitable case; but it is impossible for anyone who can propel the machine, without undue effort or apprehension, to be injured, whatever the state of his lungs, by working an ordinary tricycle for a few hundred yards along a good flat road. Setting aside unnecessary efforts through clumsiness, the only possible modification in the circulation must be in the direction of relief. Little by little the distance may be increased, and progressively steep hills introduced into the daily programme; and, strange to say, improvement will sometimes occur even in the most apparently hopeless cases. Both De Civry and Charron were pronounced to be

hopelessly phthisical at the age of twenty-one. De Civry related his case to me in 1888, when I published it in the first edition of my book. He had so little of his original disease then remaining, although he had taken several years to emerge from invalidism, that he had recently acquired the title of champion of France, doing one hundred kilomètres in what was then good time, about four hours. This was not perhaps the most sensible thing to do, but it showed the entirety of the recovery of a formerly tuberculous subject. That there had been no error as to the nature of the original affection, was proved a little later, when twenty and more years after the primary recovery, a new explosion of tubercle took place in the tarsus, and the following year tubercular meningitis, which proved fatal.

Charron, now the director of Humber's branch in Paris, was refused for the Conscription by the military authorities for lung disease in the third degree. A short time after he was racing, and the apparent incompatibility of cycling, with distinctive lung disease, was pointed out to those who refused him. They adhered to their diagnosis, and Charron to his training, he becoming in his turn the champion of France. A glance at his physique, blue eyes, long lashes, high cheek bones, suggests at once a possible victim. The type cannot of course be changed, and there is flattening of one side of the thorax, besides other unmistakable evidence of previous considerable destruction.

Curiously enough the German champion (this I only relate by hearsay) of last year, Lehr, I believe, is his name, was also refused for lung disease by the military authorities. The previous examples do not, of course, make it advisable for every lung sufferer to carry cycling to the same extent, but they show that even the most active cycling is not as dangerous, even in the most advanced cases, as might have been anticipated.

The last point I shall touch upon is the question of cycling for women. Seven years ago I maintained that not only was it a Heaven-sent exercise for women, in health, but that, in addition to the same therapeutic indications as in men, the existence of chronic derangements of the uterus and its appendages was an indication rather than an obstacle to rational cycling. Naturally it might be harmful when carried to excess. For the twentieth time I asked what could possibly be more suitable to an atonised organ, bound down in unhealthy positions by hyperplastic deposits, often surrounded by morbid collections, and filled with unhealthy acid secretion, than this physiological programme to which I have so often alluded, of an abundant supply of tissue-forming, exudation-removing, and tone-restoring

blood; and it is impossible to contest the fact that the blood during cycling is this to a pre-eminent and special degree. Notwithstanding this, apart from the few authors I was able to quote, medical authorities looked askance at the wheel in uterine trouble, and in France, a writer who defined a woman as a uterus with organs around it forbade it almost absolutely in this case, whether in health or disease. The fair sex has now decided the question for itself, and its verdict, affirmative on both points, has practically been endorsed by the profession. One of the most influential advocates for it for women is Dr. Lucas-Championnière, whose three publications on the subject are amongst the most important. But the most authoritative document we have is the report on "Women and Cycling," published by Dr. W. D. Hogg, in the "Journal de Médicine de Paris," and based upon an enquiry to which forty-six replies were made by physicians residing in France, England, Belgium, Spain, Holland, and Switzerland. Of these, thirty-four approved of it as an exercise entirely, nine disapproved entirely, and three qualified their disapproval. To the question, if evil effects ever resulted in the constitution generally, two French physicians trotted out the old spectre of neurasthenia; one opined that in certain cases it gave rise to considerable genital excitement, as indeed, said the writer, does equitation; the other dissidents knew of no reason to support their antipathy.

In reply to whether it produced a bad effect on the genital organs, M. Aubeau (I give names, for this is the chief point at issue) thought not, if the organs were healthy; evidently so in disease. M. Auvard was of the same opinion, but they thought that the vulva and anal region are greatly congested after cycling, an opinion shared by Bergeron, Bloch, Bonnet, Chantemesse, Chaput, Ferrand, Gendron, Leon Petit, and Rey. M. Lucas-Championnière, who has certainly made a speciality of the subject, and who has read three papers on it, says not, if the position of the woman is correct. M. Jouin says he knows women with fibromata who are better since they cycle, although he would not take it upon him to counsel it in such a case, but he would for nervous dysmenorrhœa, which it improves. M. Le Blond, a gynæcologist, has not yet met with any evil effects. M. Poitou-Duplessis compares its effect with that of the sewing machine—a transparent mistake too often exposed to require correcting here—and naturally would not recommend it in chronic congestion.

M. Rey does not think it possible for moderate cycling to cause inflammation, but he would not allow it in ovaritis, salpingitis, or metritis. M. Stapfer expresses himself to the same effect.

MM. Clarke, Loviot and Mlle. Pokitonoff by no means think it in-

offensive, although no evidence is given. M. Moert sees in it the occasional cause of salpingitis and displacement. M. Olivier has observed hæmorrhage and pain as a result, and M. Touvenaint, who has a clinique, has noticed even in moderate cyclists congestion of the uterus and its appendages, which might even go on to relaxation of the suspensory ligaments.

Drs. Fancourt Barnes, Byers, Dolan Doran, Standfield Jones, Heywood Smith and Walters have observed no evil results. Dr. Vuillet, of Geneva, considers it inoffensive in the healthy, and only baneful in disease to the same extent as riding on horseback, in carriage, or train. M. Cortiguera thinks it might cause intra-pelvic congestion. M. Jacobs, of Brussels, says it determines vaginismus, that it may cause the venereal orgasm in hysterical subjects, and that it increases congestion of the pelvis. Drs. Bell and Evan Jones judge in the same way, and Mr. Lawson Tait quotes two cases of acute erotic mania, which had no other cause. As regards the answers to the question, as to whether these drawbacks were compensated by any advantages to the economy, most do not seem to have adhered to the question. Half-a-dozen recognize no advantages at all. For M. Lucas-Championnière, the advantages are incalculable. When it comes to selecting the kind of cases that may be benefited by cycling, the pessimist division again abstains, being inspired with nothing but pious horror by it. One Englishman declares even that he can give no information on the subject, as he does not know of any lady in his district who cycles! Those who have, on the contrary, deigned to study the matter, speak not only of its beneficent action on the health generally, but also in neurasthenia, nervous troubles, hysteria, morphomania, all cases of debility, anæmia, chlorosis, lymphatism, as stimulant of the nutrition in intellectual fatigue, diabetes, dyspepsia, spleen, gout, sub-acute and chronic rheumatism, constipation, migraine, early tuberculosis, emphysema, chronic bronchitis, amenorrhœa, by pelvic anæmia, nervous dysmenorrhœa, and, in some cases, of slight hydrarthrosis and dry arthritis.

With respect to the accusations of genital excitement as a result of wheeling, this is the opinion of an American specialist before a New York Society: "In regard to the excitation of the genital organs in both sexes, I am quite confident that this never occurs, unless it is done purposely, or else by the greatest negligence. A woman who wishes to obtain friction of her genitals on the wheel can easily do so by adjusting her saddle for that purpose. But if she does so her position will be so uncomfortable as to deprive riding of all enjoyment. She may ride for the purpose of obtaining genital irritation, or she may ride with

perfectly proper motives, but she cannot do both at the same time." It is endorsed textually by Mlle. Garches Sarrante, M.D.

The utility of cycling in certain uterine affections receives support from the following two cases, hitherto unpublished, with which we will conclude this paper. The first was related to me by Dr. Lucas-Championnière, the other by the patient's husband.

A woman was admitted to hospital suffering from an utero-ovarian disease, for which it was declared necessary to extirpate the ovaries. The patient, alarmed at the accounts she heard, fled from the institution, and, notwithstanding the remonstrances of both friends and doctor, began to practise cycling. This exercise has so modified the state of the organs that no discomfort is now felt, and she has become a professional (*une veritable record-woman*).

The wife of a chemist, emotional to the highest degree, suffered from obstinate constipation, with dyspepsia, insomnia, palpitations of the heart, oppression of breathing, difficulty of mounting the stairs, œdema increased by exercise. A hospital surgeon had decided to remove the ovaries, in order to cure the salpingitis that was the chief cause of her trouble. The patient had some difficulty in escaping from her would-be saviour, and of following without interference the advice of a young practitioner, who counselled the bicyclette. The counsel has been followed. The weakness of the heart disappeared, the swelling persisting for a time. There is now no congestion of the pelvis, and the patient can do her sixteen miles without trouble. These facts should make us examine more carefully into the so-called congestions of the uterus. Many condemn cycling, of which they ignore absolutely the physiological effects, on pretence that it does not suit in congestive complaints; whereas it is precisely in torpid congestion that active reparative hyperæmia with over-oxygenated blood can be of the greatest service. One would not, of course, counsel *unrestricted* cycling, but in some instances it would certainly be worth trying before deciding on so serious a procedure as castration.

Sensory Distribution of Spinal Nerve Roots.

By WILLIAM THORBURN, F.R.C.S., B.Sc.

THE exact sensory distribution of the various posterior spinal roots is a subject which has during the last few years received much attention, and upon which there is now a considerable consensus of opinion. Their study is not only of the utmost clinical importance, as enabling us to localise many medullary lesions, but it possesses a considerable morphological interest, and the writer has therefore endeavoured to demonstrate in the accompanying drawings the results obtained by several recent workers.

One of the earliest observers of the sensory root-areas was Ross,[1] who, attracted by the morphological aspect of the question, laid down the great general principle, that each pair of roots has a segmental distribution in the limbs as well as in the trunk. Regarding the upper limb as a lateral "bud" thrown out with its palmar aspect anterior, he showed that the roots of the brachial plexus will lie in horizontal series, so that as we pass from the radial to the ulnar border we shall find the fourth, fifth, sixth, seventh, and eighth cervical, and then the dorsal series in parallel lines. Similarly if the lower limb be placed in its embryological position as a lateral "bud" between the first lumbar and fourth sacral segments, with the hip rotated outwards, and the sole of the foot turned in, we have the lumbo-sacral roots extending outwards from the trunk in parallel horizontal series.

The writer has published many clinical studies of these root-areas[2], the results of which are indicated in *Figs. A* and *B (Plate II)*. The method adopted has been the clinical observation of injuries and diseases of the cord, the anæsthetic areas being mapped out in a large number of cases, which were compared with one another, and with the *post mortem* appearances, and motor and other symptoms.

Cases have also been published by Bruns, Mills, Herter, and many others, which closely confirm these results, being in many instances almost identical.

Starr[3] has studied a large number of cases on similar lines, and

has arrived at results, which, although presenting differences in detail, are very closely comparable. In the case of the upper limb his conclusions are so similar to mine as hardly to call for separate representation, but his diagrams of the distribution of roots to the lower limbs are given in *Figs. C* and *D*, which, for convenience of comparison, I have coloured upon the same principle as my own.

Mackenzie[4] and Head[5] have also arrived at a scheme of sensory distribution, by a totally different method. Both of these writers mapped out areas affected by herpes zoster, and assuming these to be "root-areas" they obtained clinical pictures of the root distribution. Head, in particular, was concerned to define areas of hyperæsthesia associated with visceral disease, and he satisfied himself that it was possible to distinguish a large number of such areas, each of which he assumes to represent the distribution of a nerve root.

His areas are represented in *Figs. E* and *F*, which are again modified from his original drawings, so as to bring the colouring into conformity with my own diagrams.

From the experimental point of view Sherrington has worked out the distribution of sensory roots in the monkey, but his results are only generally comparable with those of clinical observers. In the main, however, he bears out the arrangement of Starr, Head, and myself, and he is able to indicate very clearly the *segmental* distribution of the various roots.

If now, the reader will compare and contrast these various diagrams, he will find that the general conclusions of observers who have worked quite independently, and in some cases upon totally different lines, are so closely similar as to leave little room for doubt as to their correctness, but he will also find differences which may be briefly mentioned.

Dealing first with the upper limb, we find the *fourth cervical* root supplying the skin over the region of the clavicle and upper part of the deltoid—a region not represented in my diagrams, but so well known as to require no comment. The *fifth cervical* root is represented by Starr exactly as in my diagram, and is amply illustrated by many clinical cases of root paralysis. It extends from the junction of the upper and middle thirds of the deltoid (or thereabouts) in the form of a strip down the outer side of the arm and forearm to the styloid process of the radius. The *first dorsal* root is also very clearly defined. My own observations are clearly indicated in the diagram, and Starr gives to it a similar distribution, save that he omits altogether the tract which I assign to the *second dorsal*—a tract capable of verification by gross anatomy as being supplied by the intercosto-

humeral branch of the second dorsal nerve. Head, on the other hand, brings both the first and second dorsal nerves a little lower on the limb than I have thought it right to do.

Between these clearly defined roots—the fifth cervical and first dorsal—lie three others which are as yet not fully differentiated. That they supply the hand is certain, and they also occupy a tract in the back and front of the arm and forearm intervening between the fifth cervical and first dorsal. It is also certain that they lie in parallel series across the hand, so that proceeding from radial to ulnar border we have respectively the *sixth*, *seventh*, *and eighth cervical* roots. My own strong opinion is that each of these three roots is represented by a strip on the back and front of the limb, extending from somewhere near the shoulder joint straight down to its expansion in the hand, and Starr actually figures such a distribution; but this opinion is founded partly upon theoretical grounds, and has not so far been found capable of direct demonstration. Such demonstration is indeed little likely to be attained, as anæsthesia or hyperæsthesia of a single one of these narrow tracts would be incapable of delimitation owing to the overlapping which all areas present. On the other hand Sherrington's experimental observations lead him to deny the existence of the narrow sensory bands in the arm and forearm, which I would assign to these roots, and to hold that they appear only in the hand. The question, which is still an open one, is however of morphological rather than clinical interest.

Passing to the consideration of the trunk, the areas given in my diagram are admittedly somewhat diagrammatic, but they are well known and require little comment. An important "rallying point" in localisation is the *nipple*, but its exact relation to root-areas is as yet not certainly ascertained. Sherrington says that it lies "in the middle of the fourth thoracic field" of the monkey, which corresponds to the fourth dorsal segment of man, and "Quain" tells us that "the third and fourth [dorsal] nerves are supplied to the mammary gland." Head, on the other hand, has the nipple at the junction of the fifth and sixth root-areas, but as I have elsewhere pointed out, I believe that Head has one area too many upon the trunk, having carried the fifth dorsal root too high, and the twelfth—as we shall shortly see—too low. My own localisation of the nipple in the fifth root-area is deduced from the conclusions of the others and not from personal observation.

The *umbilicus* again is a localising point of importance. Rüdinger assigns it to the eleventh dorsal root-area, Schwalbe to the tenth, and Quain to the boundary between these two, an arrangement which in

default of clear evidence I thought it well to adopt. Head has it at the junction of the ninth and tenth areas, thus again "throwing down" his lower root-areas, as if he had made room for one too many. It is, however, by no means improbable that the segmental position of the umbilicus, and therefore its relation to root-areas, may be variable.

We may now pass to the lower limb, where again we find striking coincidences among various observers, although there are important discrepancies.

The *first lumbar* root-area of my diagram is confirmed by anatomy as well as by clinical research, and is apparently accepted—although not depicted—by Starr. Head's first lumbar root corresponds closely to my second, and his twelfth dorsal to my first lumbar; but if it be the case, as suggested, that he has inadvertently "thrown down" these areas by one root, his results appear in close accord with my own.

The *third* and *fourth lumbar* roots are not differentiated at all by Head, and the latter is also omitted from Starr's diagram; these two areas are seldom defined clinically, but my diagrams are founded on several personal observations. The *fifth lumbar* root is closely similar in Starr's diagram and in my own, save that Starr carries it up by a narrow strip to the middle line of the trunk. On theoretical grounds I believe this strip to exist, but as it is incapable of clinical demonstration I have left its presumed area uncoloured. Head makes this root supply less of the foot than is assigned to it by other writers.

Regarding the *first sacral* root, Head and I are in close agreement, except that Head gives it a larger distribution in the foot, thus impinging upon my fifth lumbar area. Starr has the first sacral in the region which Head and I assign to the *second*, but as he omits the latter altogether, he is probably here in error: indeed in his latest paper he admits that it is "quite probable that Head and Thorburn are correct," but regards the question as still an open one.

The *third sacral* area is one of the most clearly defined, and has been accepted by all writers since I first described it under the name of "the saddle-shaped area." It is constantly recognizable clinically, and includes the penis and scrotum, except at the base, as well as the inner part of the gluteal region and upper inner part of the thigh. Internal to this region and in the perineum we should find the fourth and fifth sacral areas, which Starr figures, but these roots are seldom capable of clinical differentiation from the third, and are omitted from my diagrams. They are probably so small that they would not be vis-

ible in a figure drawn with the thighs in apposition. Lastly, the third sacral root supplies also the sensory nerves of the urethra, but not those of the testis, which is morphologically a lumbar organ.

[In a few of my root-areas the two sides of the body are not represented as symmetrical; cases differ in some details, and an attempt is thus made to indicate the more important of these differences.]

REFERENCES.—[1] "Brain," 1888, p. 333; [2] "Ibid.," 1888, p. 381; 1887, p. 510; 1888, p. 289; 1893, p. 355; "Surgery of the Spinal Cord" (London, 1889), &c.; [3] "Brain," 1894, p. 481; [4] "Medical Chronicle," August, 1892; "Brain," 1893, p. 321; [5] "Ibid.," 1893, p. 1.

Angio-Neurosis.

By W. RAMSAY SMITH, B.Sc., M.B. Edin.

This article is meant to follow the same general lines as last year's, adding new illustrative facts, tracing out more connections of diseases, emphasising exceptions of the sort that lead to new discoveries, and endeavouring to systematise our knowledge of many diverse and apparently unrelated phenomena. If any plea required to be urged for such an attempt as is now made, it would be found in a study of the outbursts of the spirit of rebellion against the employment of modern methods of investigating disease to the exclusion of modes less recent, but not therefore less trustworthy in their nature, or less fruitful in their results. Dr. De'Ath[1] protests against the sufficiency of the "hospital study" of the diseases of mankind, comparing it to the zoological garden study of the habits of wild animals, as he protests against the spray, the germ theory, or serum therapeutics, ruling all surgical and medical treatment. Sir James Paget[2] points out that the study of the characters of mixed diseases from the point of view of heredity might best be worked out in private practice. Dr. Duncan Bulkley,[3] in quoting Sir Henry Holland, Sir Thomas Watson, and others on the subject of the etiology of psoriasis, says he purposely quotes these older writers rather than those of recent date, better known in connection with diseases of the skin, "because the tendency of modern specialism has been rather in the direction of the minute study of local lesions and of the local causes of diseases of the skin, and away from constitutional conditions; and the so-called humoral views of older writers have been rather overlooked of late." And Dr. C. H. Hughes,[4] of St. Louis, while recognizing the importance of causative bacteria and bactericide, and all the facts of chemico-biological research, enters a strong plea for the study of the nervous system as a chief factor in disease and for the practice of medicine from a neurological standpoint, and emphatically enunciates his belief that "neuriatry and the practice of general medicine are practically one."

In considering the subject of angio-neurosis we have to ask two questions: (1,) What are the phenomena that indicate disease, disturbance, or instability of the vaso-motor system? and (2,) What are the various possible factors that may act upon the vaso-motor system so as to produce those phenomena? But here there arises the necessity

for a caution, for while taking our stand by the vaso-motor system we must remember the possible plurality of causes, and the equally possible multiplicity of effects. To illustrate: Dr. R. Milbourne West[5] records two cases as a help to clear up the "uncertainty about the existence of a phenacetin rash." The first, in a man, took the form, in repeated attacks, of a dense scarlatiniform rash, slightly raised from the skin surface, and causing a tingling, smarting sensation. The second, in a woman, was an urticarial rash of raised wheals, chiefly on the face and neck, and accompanied by a sensation of heat and tingling. Now Dr. West's cases are really proof that while a rash, or various rashes, may follow the administration of phenacetin, there is no such thing as a distinctive phenacetin rash. If we say, echoing Sir Thomas Watson[6] on the causes of disease, that the cold of a shipwreck gives one person catarrh, another rheumatism, a third pleurisy, a fourth ophthalmia, a fifth inflammation of the bowels, shall we argue from this that there is such a malady as "shipwreck disease"? Such an argument would violate the logical doctrine of the plurality of effects arising from a common cause acting in conditions that are not and cannot be identical in all persons and at all times.

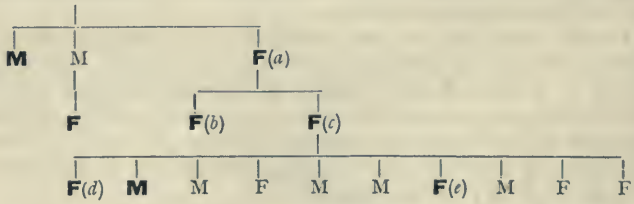
On the other hand we must recognize that a rash, which in one instance may be produced by phenacetin, may in other cases be produced by a score of other causes, mechanical, chemical, vital. A scarlet rash may be associated with scarlet fever, typhoid, childbirth, emotion, various drugs, and peripheral irritants, in such a fashion as precludes the possibility of our saying that the rash is distinctive of any one of these particular causes.*

Seeing, then, that the number of manifestations of vaso-motor disturbance is very large, and that the possible disturbing factors are very numerous, it follows that the causal combinations must be practically unlimited, and the question arises, Is a study of such conditions hopeless, or is there some principle that will bring order out of apparent chaos? There is such a principle; and in investigating diseases of the vaso-motor system we shall be applying it properly and fruitfully if we endeavour on the one hand to trace out all the possible and probable conditions that can be ascribed to vaso-motor disturbance, and on the other hand to enquire into all the possible agents that can cause disturbance of that system. Having done so, we shall not then

* If "cause" be defined as the "sum of conditions," and our knowledge of all the conditions were perfect, then there could be no plurality of causes. But if by "cause" we understand one of several possible antecedents the above statements may stand. What I would aim at is some advance in "scientific clinics," which means the correlation of diversities into a system.

be guilty of affirming that any one cause may produce all or many of the numerous effects, nor that any one effect may be produced by all or many of the causes, but we shall be in a position to take a simpler and, at the same time, a more comprehensive view of the subject of angio-neurosis.

In noting the manifestations of angio-neurosis in *individuals* I have usually fixed attention on some one phenomenon or condition that will be allowed by nearly universal consent to betoken instability of the vaso-motor system in the individual, and then I have noted conditions that might, with some amount of logical probability, be recognized as causally connected with these undoubted manifestations. In making enquiries into *hereditary* manifestations of angio-neurotic conditions, my attention has been directed less to the transmission of a particular manifestation or disease than to evidences of instability of the vaso-motor system generally. Of course one sometimes discovers remarkable family histories of particular affections. Though psoriasis sometimes, perhaps even often, shows heredity, the following family history shows a greater influence of heredity than one usually finds.



M, is male ; F, is female ; heavy type denotes those who sufferd from psoriasis, viz., eight out of sixteen. But this is not all. *(a,)* Was in hospital for twelve months for psoriasis, and died at the age of sixty from "bronchitis," which came on after the spontaneous disappearance of psoriasis ; *(b,)* Was subject to erythema of the face ; *(c,)* Suffered only slightly from psoriasis, but came under my care for angio-neurotic œdema with associated "chronic bronchitis," which was merely a slight passive congestion ; *(d,)* Came under my care for erythema nodosum, due to sewer gas poisoning ; *(e,)* Is one of the family photographed (*Plate III., Fig. C*) as a specimen, showing how severely the psoriasis affected the members of this family. The only child of *(d)* suffers from laryngismus.

The fact that *(a)* and *(c)* both suffered from psoriasis and "chronic bronchitis," but that the two conditions were not co existent, reminds one of the relation of eczema to asthma, and directs attention to the mode in which some diseases that are apparently manifestations of

the same "type" of constitution are mutually exclusive. Dr. Karl Grube[7] records two cases, in brothers, of coincident diabetes and psoriasis, in which the two conditions varied inversely, the psoriasis becoming worse as the diabetes improved, and *vice versâ*. Two other cases of Dr. Grube's showed the same association and variations. In such cases the pathology of the various conditions is obscure. In some other cases, however, there seems to be more light regarding the exclusive conditions; *e.g.*, Dr. P. Campbell Gowan[8] relates two cases under his care which began as Graves's disease, and ended as myxœdema, and gives the histories as an illustration of the passage from a condition of general exaltation with thyroid hypertrophy to one of depression with atrophy of that gland. Four similar cases have been recorded by Dr. W. W. Baldwin.[9] It is an old observation[10] that cancer is most prevalent in persons of a scrofulous constitution. Now this may be true, but it may also be true, as stated by Dr. W. Roger Williams.[11] that the co-existence of cancer and tubercle in the same person may be almost unknown.

With these explanations I pass to consider manifestations and associations of angio-neurosis recently recorded, and in doing so I shall, in some instances, supplement them by, and compare them with, the researches of older observers that have been rather neglected of late, and that bid fair to be forgotten in days when the "intent" of scientific experiment threatens to displace the "extent" of clinical observation.

Dr. C. S. Evans[12] reports a case of general angio-neurotic œdema in a woman, occurring in four successive pregnancies, and presenting several features of Graves's disease. Before confinement there was great swelling of the abdomen, feet, hands, and face, with vascular swelling and distension of the vessels, without tenseness or blanching of the skin, and without pitting on pressure. Immediately after labour the patient became collapsed; and the pallor, faintness, and profuse perspiration were followed, not preceded, by considerable hæmorrhage. Dr. Evans says of this case, "The excitability, tachycardia, increased perspiration, altered vascularity and nutrition of the skin, enlarged thyroid gland, and active mental condition, unite in showing the case to be a phase of Graves's disease, or what has been called by Dr. Ramsay Smith angio-neurotic œdema." I have no doubt whatever that Dr. Evans's case is a phase of Graves's disease, and my conviction is strengthened by personal observation of similar cases. In April of this year (1895) a lady consulted me on account of "biliousness." The history pointed to migraine, and her refraction was, right eye + 2·0 D. sph., left eye + 1·0 D. sph. There was a residue of

symptoms that led me to enquire closely for evidences of Graves's disease, but the neck and eyes seemed normal. In October I was called to see her during an attack, and then I found a condition that might accurately be described as Graves's disease—tachycardia, tremor, exophthalmos, bronchocele. I asked why she had told me previously that there were no neck symptoms, and she said that her medical attendant had called it "hysterical swelling." When the accompanying photograph (*Plate III, Fig. D*) was taken a few days after the attack the exophthalmos had disappeared, but the thyroid enlargement is still visible.

Dr. Philip S. Roy,[13] of Washington, records a case of localized angio-neurotic œdema with gastric pain and nausea in a woman forty-five years of age. The swelling began in one foot, and affected the other extremities in succession, and afterwards the face. In remarking on a case of Raynaud's disease, and one of Ménière's disease, which he reports at the same time, he says, "These cases of nervous disease, the clinical histories of which differ so widely, are all due, according to our best light at this time, to vaso-motor influences. . . . The more persistently we keep in mind the nervous system in making diagnosis the oftener are obscure cases made clear to us."

At the Practitioners' Society of New York,[14] Dr. Charles L. Dana showed a man suffering from localized angio-neurotic œdema. The eruption was whitish, with a little rose tinge, but never took the form of wheals. The swellings could be brought out by scratching, and by quinine. Dr. Dana ascribed the disease in this case directly to the abuse of tobacco, which seemed to him to have a special effect in certain cases on the vaso-motor system. Dr. Walker narrated a case of recurring attacks in a man of gross appetite with slight rheumatic trouble, and Dr. Peabody said he had a case in a man of gouty heredity

In connection with localized angio-neurotic œdema we may consider the subject of phlegmasia alba dolens. A case under the care of Dr. Herman, of London,[15] is reported in which a young virgin, healthy except for a slight anæmia, suffered from double phlegmasia alba dolens. Dr. Herman remarks on the extreme rarity of the case "which, by its exceptional features, negatives some ill-founded theories as to the nature of the disease." Dr. Cameron Kidd,[16] not recognizing the extreme rarity of the condition which occurred in a patient of his in 1891, delayed publishing the facts till after Dr. Herman's report appeared. Now while the term phlegmasia alba dolens is clear enough clinically, no one says much regarding the essential pathological features of the condition, and this lack of definition is largely account-

Fig. A.

Fig. B.

Fig. C

Fig. D.

able for what Dr. Herman calls the "extreme rarity" of such cases. Dr. Robert Lee, in 1829, first established the theory, founded on post mortem dissections, that phlegmasia alba dolens, or crural phlebitis as he preferred to call it, was due to inflammation, which, excited in the uterine branches of the hypogastric veins, might spread along these to the external iliac and femoral veins, and so give rise to all the symptoms of white-leg. Although Lee did not hold that all white-leg was uterine in origin, since he discusses the condition as it occurs in women who have not been pregnant, and in the male sex, still his article on the subject [17] is dominated by the idea of an inflammation of the veins as *the* exciting cause, and he never saw anything beyond his theory of "crural phlebitis." Up till the end of last century white-leg was thought to be due to inflammation of the lymphatics.

In 1807 Albers [18] thought the disease was essentially a form of neuralgia or neuritis, commencing in the nerves of the limb and followed by swelling; and it is a matter for regret that this theory, which since then has been shown to be true in many cases, should have been almost entirely forgotten. Hankel [19] and Kruger [20] thought it was a disease of the nerves of the pelvis and thigh, followed by changes in the veins, lymphatics, and arteries of the limb. Copland's view [21] in 1858 was this: "I believe, however, from considerable experience of this disease, that phlegmasia dolens is a more complex affection than it is generally now considered to be—that it is not always at least a simple crural phlebitis—that it does not always, although very frequently it does, originate in uterine phlebitis, that it is not uniform in character, phenomena, and progress, and that it is a much more complex disease than it is generally viewed to be."

This subject was forced upon my attention some time ago by two cases of œdema of the leg occurring in my practice in the course of typhoid fever. After a careful study of these two cases of "femoral thrombosis in typhoid," as I have no doubt the affection would be named, in which I found no evidence of thrombosis of the femoral, I have read the classical cases of Graves [22] and Trousseau [23] with a new interest and a growing conviction that the neurotic theory of origin has more support in fact than has the thrombotic.

To pass now from angio-neurotic œdema to other angio-neuroses, we have to consider what appears to be a well-marked aggregation of symptoms described by Dr. Jacob, of Cordowa, under the title "Acute Chronic Dilatation of the Heart." [24] This condition is characterized by rigors of varying intensity, with subjective sensations of anginal character, hard pulse, dilatation of the pupil, brachycardia or tachycardia, and, in long continued attacks, pulmonary œdema with albu-

minuria. He regards the symptoms as due to arterial spasm, and the dilatation of the heart as the consequence of inability to cope with the extra work thrown upon it by the spasm.

A case of the disease I have named erythema-urticaria [25] is reported [25] as occurring after the administration of antipyrine in a man thirty years old, who suffered from psoriasis. After a preliminary stage of tingling, itching, sensation of heat, frequent pulse, red face, and tear-filled eyes, the rash appeared and took the form of a collection of bright red plaques, mostly of the size of a five-franc piece, slightly elevated and scattered all over the body. Most of the plaques grew pale and disappeared in about fifteen days. Some of the largest presented in their centre an "abortive bulla," and remained for a little longer.

In a patient of mine, a girl suffering from gastric ulcer, an attack occurred of erythema-urticaria. This recalls the case mentioned by Féré [27] of cutaneous gangrene associated with gastric round ulcer, and his question whether the two conditions might not be due to the same nervous cause. The neurotic theory of gastric ulcer receives strong support from a case of Rochemont's,[28] where, in a woman aged thirty-eight, there was found ulcer of the pyloric end of the stomach, independent of, but associated with, carcinoma of the lesser curvature and posterior wall. In Rochemont's opinion the ulcer appeared later than the cancer. In a girl twenty years old, a patient of Dr. G. E. Hales,[29] suffering from gastric ulcer, the administration of a soap and water enema was followed by the appearance of a symmetrical scarlet rash like a very small whealed urticaria.

The case is reported [30] of a young man who, after eating certain articles of diet, suffers from well-marked urticaria, associated with extreme dyspnœa with swelling of the mucous membranes of the mouth and nose, the whole attack passing off in an hour or two. The writer asks, "Is the dyspnœal attack asthma, due to swellings in the mucous membrane of the bronchi similar to the urticarial swellings of the skin?" This question has already been asked by Trousseau,[31] and a similar one by Dr. Fitzgerald.[32]

Other instances of the association of urticaria with dyspnœa are recorded by an observer,[33] who states that he had no doubt in his own mind that the respiratory tract was affected in the same way as the skin.

The association of asthma with eczema is well-known, but on one occasion I saw a phenomenon that was perfectly new to me. The patient has been a chronic asthmatic for many years, and has also suffered from exacerbations of eczematous patches on the arms and legs. One day he came to me complaining of a feeling of tightness on the

left side of the chest, and of tingling of the right arm, right leg, and right side of the body. The sense of effort in wheezing was referred to the left side of the chest. There were small ulcerations on the left side of the mouth internally. On examination I found that the physical signs of asthma were confined entirely to the left side of the chest, the difference between the two sides being most distinct. I am not aware whether *unilateral asthma* has been reported or not, but if it has I have failed to find the record of it.

Dr. Solomon Solis Cohen,[34] under the title of Vaso-motor Ataxia, gives a careful record of a number of cases of angio-neurosis investigated by him. The causes and manifestations he enumerates are, if not exhaustive, at least very suggestive, and indicate many lines of profitable investigation. In connection with a statement of Dr. Cohen's that pulmonary tuberculosis in some cases is probably a sequence of vascular and trophic disturbance in the lung, I may direct attention to the theory that tuberculosis is held by some to be essentially a disease of the nervous system. The "Neurotic Element in Pulmonary Consumption" is the title of a paper by Dr. Thomas J. Mays, of Philadelphia,[35] in which he discusses the *rôle* of the nervous system in phthisis, and the connection of this malady with such diseases as epilepsy, asthma, and hysteria. In investigating the family history in various kinds of angio-neurosis, I have often been struck with the frequency with which "phthisis" occurs. I had concluded from cases that came under my care, that some, if not many, of the cases so diagnosed were not really cases of that disease at all, and at the present moment I still lean to that conclusion.

As manifestations of angio-neurosis, hæmorrhages are not uncommon; and their associated conditions are sometimes of considerable interest. Dr. Henry Waldo[36] found in a case of acute œdema ("active congestion") of the lungs, purpuric spots or petechiæ on the back, abdomen and thighs. The patient, a man aged thirty-one, of good physique, had lived poorly for some time, chiefly on bread, and had pitting œdema of the legs. Hæmorrhagic spots were found all through the intestines, from the œsophagus to the rectum.

Dr. T. C. Railton[37] reports a case of disseminated sarcoma on the scalp of a boy twelve months old, associated with hæmorrhages into the skin, beneath the periosteum of bone, and into the retroperitoneal and bronchial glands. Dr. Railton discusses some recorded cases, and concludes that the theory of embolism does not account for all the phenomena of secondary deposit or skin hæmorrhages. He notes that the subperiosteal hæmorrhage allies this disease with infantile scurvy in its clinical aspect.

Winckel[38] notes the frequent occurrence of hæmorrhagic endometritis after bad burns. In this connection it is well to recall the association often observed between burns and ulceration of the duodenum.

At the International Congress held at Rome, Dr. Ignazio Carrieri[39] related a case of purpura hæmorrhagica associated with chronic articular rheumatism, and complicated by a grave form of iritis.

At the Clinical Society of London Dr. Sansom[40] reported two cases of purpura hæmorrhagica with acute pemphigus, probably due to influenza.

Dr. Spiridion Kanellis,[41] of Athens, reports a case of gangrene of the right leg following acute rheumatism, in a woman who had been subject to uterine hæmorrhage.

The associations of diabetes are numerous, and have received a good deal of attention. But "diabetes" itself, as a possible manifestation of the neurotic temperament, has not been sufficiently studied or recognized. I have recorded[42] in detail one very typical case in which simple glycosuria was turned into "diabetes" by a faithful adherence to medical instructions and diabetic dieting, and I have seen more instances of the same sort.

Dr. Landon Carter Gray[43] read a paper at the New York Academy of Medicine on Persistent Albuminuria and Glycosuria in cases of Functional Nervous Disease, with a record of sixty-nine cases. He believes that albuminuria, excess of uric acid and oxalate of lime are probably the results rather than the causes of the disease, and that many, if not most, of the cases are not cases of early nephritis.

Dr. L. Bayer,[44] of Brussels, found glycosuria associated with nasal obstruction. After treatment of the nose, the glycosuria and other trophic symptoms disappeared. He accounts for the glycosuria in part by the diminished absorption of oxygen, but specially by the resulting circulatory (asphyxic) and nervous (bulbar) troubles.

In this connection it is of interest to recall the theory propounded by Dr. Shawe Tyrrel, of Toronto, that hay fever is a result of uric acid in the blood. It is possible, however, that both the uric acid and the hay fever are vaso-motor neuroses, due to more than one cause.

The presence of uric acid in the blood is a fruitful cause of many troubles, if all the theories on the subject be true. I had reported[45] two cases of urethral caruncle in which I did not operate. One required no treatment at all; the other gave rise to no symptoms after the co-existing pelvic symptoms had been relieved. Dr. Edward Blake[46] explained the occurrence of these caruncles on the theory that they were a reflex from the deeper urinary tract, and due possibly to

uric acid. Since then I have found that Dr. Rabagliati[47] has described them as symptomatic of nephrocystitis, due, he believes, to lactic rather than to uric acid. A more general recognition of the associated factors that produce the so-called "symptoms of urethral caruncle" would save many an operation, and many a lamentation on the failure of the knife or cautery to relieve, and on the persistent recurrence of this painful affection.[48] It cannot now be said that the one treatment for urethral caruncle is removal.

In this article it is scarcely necessary to refer to the associations of exophthalmic goitre, since this disease is being everywhere discussed, and the manifestations are generally very carefully noted in the various contributions that appear on the subject. I may mention, however, that in a family of three sisters I have found one suffering from exophthalmic goitre, and the others from true goitre; that Dr. Samuel West[49] found two sisters suffering from Graves's disease with a history of rheumatic fever in both; and that Dr. Gordon Holmes[50] records the same phenomenon, and notes that Cheadle has reported further instances. As regards diverse manifestations of the neurotic basis, I attended three sisters, one for Graves's disease, another for neurotic asthma of many years' duration, which yielded to treatment by arsenic, and the third, although otherwise healthy, suffered from periodical hæmorrhage from the lungs until menstruation was properly established. In the case of the sister, aged twenty-one and unmarried, who suffered from Graves's disease, menorrhagia was a prominent symptom. This forms a caveat to such unqualified assertions as that, in this disease, "Amenorrhœa is a constant feature in women."[51]

Such, then, are some manifestations of derangements of the vaso-motor system, not a complete list, but an illustrative selection designed to serve as an indication of what to observe in studying this subject. The next question to be considered is, What are the causes or factors of such angio-neurotic manifestations?

Peripheral Irritation as a Factor in Angio-neurosis.—Peripheral irritation as a cause of angio-neurosis is widely recognized, and is usually not difficult to diagnose. There are, however, two observations that I should like to make on this subject, viz.: (1,) That in some cases it is difficult to say whether one is dealing with peripheral irritation or toxis; and (2,) That the peripheral source may be difficult to find when there are no symptoms to assist in localizing it.

The first observation refers to such cases as the ingestion of "poisonous substances," such as shell fish, which is often followed by erythema or urticaria. In these cases it is difficult to say how much of the effect is due to local gastric irritation, and how much to toxines.

In many cases, considering how very suddenly the urticaria follows on the ingestion, and how soon it disappears when the meal is vomited, one inclines to the conclusion that the theory of local irritation is more probably the correct one.

The following case is of much interest in this connection. Dr. Charles W. Allen,[52] of New York, experimented on a subject who had once been able to take large doses of quinine without any ill effect, but on whom a small dose, one-third of a grain, now produced an erythema of varied character. Dr. Allen proved that the base and not the acid was the exciting cause ; also that the effect was a reflex one, since holding the substance in the mouth or rubbing it into the scalp caused the general eruption. Coca wine produced the same symptoms in this patient ; and the statement that Dr. Allen found a marked tenderness over the spinous process of the second dorsal vertebra is noteworthy, since this is a region of tenderness, as I have found, in nearly every case of Graves's disease that has come under my notice.

The following cases illustrate very definite conditions due to peripheral irritation. Miss A. B. consulted me for a small spot of eczema on the left cheek. There were one or two small herpetic vesicles near it. In a day or two a triangular patch of herpes appeared, surrounding the eczematous spot (*Plate III, Fig. B*). There were tender spots corresponding to the exits of the fifth nerve. Examination of the mouth showed only one doubtful tooth, the first lower left molar, and I advised its removal. When the tooth was extracted it was found that the tips of the fangs were eroded by chronic abscesses. The herpes disappeared in a few days after. Dr. Head[53] has given many illustrations of this sort in his valuable investigations on this subject of referred pain.

Miss C. D. cut her left index finger on the radial aspect. The wound healed very quickly, but the healing was followed by tingling and burning pain in the arm and by a patchy erythema lower down the finger, in the region supplied by another branch of the same nerve. Worry made the pain and the erythema worse, as also did the heat of the fire and hot water. This patient, who several years ago was treated in hospital for gastric ulcer, suffered at the time from rectal ulcer, associated with extreme pain in the whole left side of the body. Operation on the ulcer left a residue of pain that made me investigate the condition much more carefully. Then I found that I was dealing with a very typical case, of what Dr. Rabagliati has recognized and described as *perimysitis rheumatica*. Under the course of treatment he recommends, the patient has almost quite recovered.

Curiously enough, the next case of *perimysitis rheumatica* that came under my care was also associated with rectal ulcer.

Such cases might be multiplied indefinitely, and are fairly well recognized. The chief interest, however, in reflex irritation has recently gathered around epilepsy, chorea, and Graves's disease.

Dr. Hugh Aiken[54] says: "If we would associate the ideas of irritation and epilepsy, and search diligently for a cause in every case, removing it, where possible, the number of idiopathic and inexplicable cases of epilepsy would be reduced." The occasion of the giving forth of this statement was a record of a case of his own where bladder irritation was causally connected with epilepsy.

Dr. A. G. Miller's[55] case of epilepsy, cured by operating on the contracted palmar fascia and preputial adhesions, should not be forgotten.

The subject of epilepsy and eye-strain has been investigated by Dr. H. Work Dodd[56] in this country; and in America by Dr. Ambrose Ranney[57], who again directs attention to his previous work in the "Medical Record."

Dr. Ranney[58] has also recorded a number of cases of the causal connection between eye-strain and chorea.

As regards Graves's disease, reflex irritation seems to play a considerable part in its causation. Dr. Scanes Spicer[59] showed before the Clinical Society of London a case of "Incomplete Graves's Disease" in a girl of neurotic type, with tachycardia, fine tremors in the arms, and thrill and pulsation in the thyroid. In this case the removal of nasal polypi caused some improvement in the patient's condition. At the same meeting, Mr. G. Stoker reported a case of enlarged thyroid that improved immediately on treatment of intra-nasal hypertrophy.

This association of Graves's disease with intra-nasal hypertrophy and polypi is fairly well recognized. But the association of eye-strain with Graves's disease seems to receive scant notice. In about half the cases I have seen, eye-strain has been a very prominent symptom, astigmatism in high degrees being the commonest cause.

The subject of reflex œdema has been touched on in a former article.[60] The following cases are illustrative. Dr. Sidney Phillips[61] reports three cases of œdema of the upper eyelid during scarlet fever without albuminuria, but associated with middle ear suppuration in such a way as to point to a causal connection between the two conditions. Dr. Phillips inclines to think that thrombosis of the cavernous sinus, by extension from the inferior petrosal sinus must be assumed to supply the link in the causal chain; but considering the venous connections of the upper eyelid, it is much more likely that the œdema was reflex from the existing middle ear irritation.

Heat as a Factor in Angio-neurosis.—How far heat acts, locally or reflexly, is a subject that demands investigation. But that its action is an important factor in angio-neurosis, there is no doubt. A sufferer from erythema-urticaria informs me that during an attack heat was the exciting cause, and for weeks the vaso-motor nerves were in a condition of paralysis. The vessels would not contract; they were in a state of functional angiectasis, following a preliminary state of deathly pallor, produced by cold—the stage of the "discharging lesion."

Mrs. A. B. suffers almost constantly from an eruption that has all the visible characters of petechiæ, and has often been diagnosed as such, but *the spots disappear on pressure.* There are exacerbations of the eruption, and the periods of these correspond with attacks of erythema-urticaria in many subjects under my constant observation. The cutaneous spots are influenced directly by heat; and the remarkably distinct appearance in the photograph (*Plate III., Fig. A.*) is due to an hour's voluntary exposure to a broiling sun in order to provide me with a good illustration.

The glycosuric patient, whose case I have referred to at page 110, shows a distension of the vessels of the face every time she is exposed to the heat of the sun, or of a warm room. It is to be noted that this has lasted since childhood, and is entirely independent of excitement or emotion. Heat, pure and simple, is apparently the only cause, and the effect of exposure is invariable. This condition is the cutaneous counterpart of the neurotic diarrhœa from which the patient used to suffer to such an enormous extent.

There is a condition just the opposite to this, viz., one in which the cutaneous vessels will not dilate. So far as I am aware, its occurrence has never been recorded. I have seen two instances of it, both in men past middle life. In these cases, liniments, fly-blisters, canthos, pure liquor epispasticus, and even croton oil applied on a cloth wrapped round a finger-joint failed to blister it.

Emotion as a Factor in Angio-neurosis.—The part played by emotion in the etiology of such diseases as Raynaud's disease, diabetes, and exophthalmic goitre is well recognized. In a case of Raynaud's disease, which developed in an old woman I attended, emotion was a powerful factor in the causation.

Dr. Lévi[62] writes on a form of Raynaud's disease that he considers to be purely hysterical, that can be made to appear and reappear under the influence of a strong emotion, and that can be made to disappear (more or less) completely under hypnotism. The localization of the lesion is often determined by a previous affection of the parts,

e.g., by rheumatism, and the onset is sudden, and is usually accompanied by renal neuroses—either anuria or polyuria.

As to Graves's disease, Reymond[63] reports a case fatal in fifteen days from mental shock. I believe this malady is often due to mental emotion. At the same time, it must be remembered that peculiar mental states differing from those that caused the malady may accompany, and even be the effects of the disease.

Mental Symptoms in Exophthalmic Goitre formed the subject of a paper by Dr. Maude at the Annual Meeting of the British Medical Association.

A series of skin changes following shock, is reported by Welander.[64] A strong, healthy man, aged twenty-four, was saved with difficulty from drowning. After the accident he became nervous and irritable, and subject to fits of trembling on the slightest provocation. A month after the accident he developed vitiligo; a year afterwards he suffered from patches of "neurodermite chronique circonscrite"; and finally, he became subject to lichen ruber planus.

At a meeting of the Royal Society of Medecine in Ireland, Dr. W. R. Dawson[65] gave an account of an insane patient who suffered every ten or fourteen days from outbursts of violent indignant grief. During the two first years of her illness the attacks were sometimes followed by erythematous eruptions, but four years from the date of her first attack, each fit of grief was followed by purpuric spots, varying in size, and appearing from time to time on nearly all parts of the body. Once blood was passed by the mouth, and once a spot appeared on the tongue. Dr. Dawson found only one similar case, which had been reported by Dr. Savage and Dr. Percy Smith.

Toxis as a Factor in Angio-neurosis.—Dr. John Harold[66] reports a case of Raynaud's gangrene in the feet with spontaneous amputation, occurring in a weak, ill-nourished boy of four years, where the perfect symmetry of the affection indicated a toxic origin, and manifestly implied "that the condition owned a general and not a local causation."

Dr. Henry Alston[67] draws attention to the fact that paralysis, after sore throat, is no proof that the patient had suffered from diphtheria; and he points out that polyneuritis may follow follicular tonsillitis, just as it may occur after childbirth, where it is due to septic causes.

The subject of puerperal polyneuritis is also discussed by Dr. Lunz, of Warsaw,[68] who divides the cases into three groups; a pyæmic or septic group, due to local infection; a cachectic form, due to grave disturbance of nutrition; and a third group, due to emotion.

Toxis, as a cause of multiple neuritis, was discussed at the Edinburgh Medico-Chirurgical Society. Professor T. R. Fraser reported

a case of multiple neuritis occurring in a diabetic and phthisical patient in whom the diabetes developed subsequent to severe anxiety; and he viewed the neuritis as due to a poison derived from the sugar. Dr. James mentioned that in his wards he had recently two cases of multiple neuritis, one in a patient suffering from diabetes, and the other in a case of advanced phthisis; and he stated that the occurrence of neuritis with tuberculosis was inconsistent with the theory of a sugar derived toxine as the cause of the neuritis. Dr. Gibson was inclined to regard the neuritis as due to a toxic agent derived by fermentative processes not connected with the sugar, but due to dieting. Dr. Clouston said that the histological changes in the nervous system of Professor Fraser's patient might be compared with certain cortical changes found in cases of diabetic insanity; and that the toxic theory would account for the diabetic coma and congestive effects arising in the vaso-motor centres of the cortex, and for the boils which sometimes occur in connection with changes in the nerves of the skin.

Dr. Davies Pryce[69] distinguishes two forms of diabetic neuritis: (*a*,) The motor or paralytic; (*b*,) The sensory or ataxic, the latter including Leyden's neuralgic group. He relates three cases of neuritis: (1,) Diabetes with perforating ulcers of the feet; (2,) Diabetes and gangrene with occasional erythematous œdema of the feet, which varied with the intensity of the glycosuria; (3,) Diabetes and gangrene. Dr. Davies Pryce thinks that the neuritis is not due solely to a specific toxic agent, but mainly to vascular disease and malnutrition.

Dr. A. Reich[70] records a case of diabetic multiple neuritis ushered in by severe vomiting and diarrhœa for four or five days, and accompanied by sensations of coldness in the extremities.

Dr. Osler[71] reports five cases of neuritis following typhoid, and shown as wrist drop and foot drop.

In one severe case of typhoid under my charge, neuritis occurred with pain, muscular atrophy, and periostitis. The ulnar nerve was the one chiefly or solely affected. I have noticed that in almost all cases I have seen of peripheral neuritis, from whatever cause arising, the ulnar nerve is apt to be more often and more severely affected than the median, probably because it is the more exposed.

A very interesting case of peripheral neuritis with vaso-motor manifestations produced by arsenic is reported by Dr. A. G. Barrs.[72]

Many cases of hæmorrhages in acute specific diseases have recently been recorded. Drs. Harold Austen and Harry Cogill[73] give a valuable summary of fifty-eight cases of hæmorrhagic diphtheria, all of which proved fatal with the exception of one mild case. The cutaneous

hæmorrhages presented two well marked types: (*a*,) Ecchymoses of varied size, closely related to ordinary bruises, and presenting the same diversities of colour, but the colour having no reference to the age of the lesion; (*b*,) Purpuric spots, varying in size, and very greatly in number. The two varieties were sometimes found in the same case. Epistaxis, generally of a severe character, occurred in eighteen cases; hæmatemesis in ten; and melæna in at least two. Post-mortem examinations almost always showed internal hæmorrhages, especially in the serous sacs of the thorax. It is noteworthy that death was in every case due to sudden or gradual heart failure.

Figs. A and B (*Plate IV*) are from photographs of a similar case that occurred this summer in my practice. The whole eruption appeared in the course of a few hours, and death took place from heart failure. The disease was also very severe in an uncle of this patient, but he recovered, not escaping, however, without severe paralysis of the palate and legs, which lasted for five months.

Treymann[74] reports a case of hæmorrhagic nephritis in diphtheria in a child of three years following the use of Behring's serum, and thinks it should be attributed to the serum. But in the same number of the Journal, Schwalbe reports another case in a child, two-and-a-half years old, before serum treatment.

Vogl[75] states that in eighty-three out of four hundred and twenty six cases of enteric fever, influenza had occurred during the incubation period, and had rendered the disease more severe. Hæmorrhages in the skin and from the nose, throat and stomach were common, and added to the fatality of the disease.

Purpura may arise from vaccination. Epstein[76] records two cases in infants under four months, and notes that, as in five cases reported by Pfeiffer, the appearance of the patches was preceded by agitation, sleeplessness and fever. Pfeiffer's cases differed from Epstein's, in the presence of blood in the vaccine vesicles, and of hæmorrhages from the mucous membranes.

Dr. Jacobson,[77] of Copenhagen, has investigated the subject of hemiplegia without brain change. From a study of six cases of his own, and thirty-two of other observers, he finds that this hemiplegia, which is usually rapidly fatal, is in all respects the same as that associated with a definite focal lesion. It occurs usually during an illness, most frequently in uræmia, but also during phthisis and after pneumonia, lead-poisoning, and puerperal fever.

While it is true, as we have seen, that urticaria and such like manifestations may be produced by articles of diet and drugs acting reflexly, it is also true that the same manifestations may be produced

otherwise, viz., by poisoning after absorption. Dr. Pick[78] shows the probability that toxic agents, ferments or micro-organisms, are produced by articles of diet that are generally associated with urticaria. By giving or withholding creasote in the case of a boy whom he fed on potatoes and preserved fruit, he could cause the appearance and disappearance of urticaria at will.

As an instance of the same specific poison producing different effects, reference may be made to the investigations of Leon Perrin.[79] While remarking that cutaneous eruptions in gonorrhœa are rare, he states that he has noted purpura, erythema multiforme, and erythema nodosum, and scarlatiniform and morbilliform lesions, erythema multiforme being the commonest. Perrin thinks that the nervous theory of these manifestations is the most rational, since it explains best their frequent symmetry, their congestive character, and the joint pains.

As instances of different poisons producing similar effects, we may note the occurrence of urticaria, after the administration of santonin, reported by Dr. G. Stewart Abram[80]; from mussel poisoning reported by Dr. Gilbert Martin[81]; after an enema, reported by Dr. W. H. Coupland[82], and after antipyrine, reported by Dr. W. M. Russell.[83]

As instances of different poisons producing different effects, we may note the following: A patient of Dr. Lannois's[84] had infantile hemiplegia, followed by continued attacks of epilepsy. During an attack of erysipelas of the thigh the epileptic attacks were less frequent, while during an attack of typhoid fever they were much more frequent. Dr. Lannois believes that the frequency of the attacks depended upon the nature of the poison, not on the febrile condition.

At the Annual Meeting of the British Medical Association, Dr. Henry Handford[85] introduced a discussion on "The Nervous Sequelæ of Infectious Disease." In his address, he touched on several of the problems that are intimately connected with the subject of angioneurosis, such as: (1,) The "congenital tendency" that must be called into activity by the virus in some cases where several members of a family suffer; (2,) The direct influence of the fever poison itself; (3,) The nature of the poison which, circulating either in the blood or in the lymph, acts immediately upon the nervous tissue and causes paralysis; (4,) Whether there is one virus or whether there are many; (5,) Whether the resulting lesion is inflammatory or (mainly) degenerative; and (6,) Whether there are specific differences in the sequels of each infectious disease. With reference to the last point, Dr. Handford notes that with so many various antecedents, there is a very strong resemblance between the sequels, and he explains this very properly by pointing out that the manifestations depend almost entirely upon

PLATE IV.

the organ and tissue affected, and very little upon the virus producing the lesion. At the same time, however, he notes that there is evidence of selection of a particular organ or tissue by a particular virus.

This subject of the selective affinity which certain poisons seem to have for certain nerves was also discussed by Dr. Seymour Sharkey[86] at the same Meeting in the Section of Pathology, who pointed out that some poisons acted on motor nerves, others on sensory, and others again on the vaso-motor mechanism, producing such diseases as Raynaud's. Dr. W. M. Ord related two cases in which gastric ulcer was associated with vegetations on the cardiac valves, and he thought that the ulcer might be the exciting reflex cause of the vegetations, or more probably that both effects were due to a common cause. In view of what has been stated above (page 108) one statement he made is particularly interesting, viz., that round ulcer of the stomach is *per se* suggestive of a neurotic origin, being analogous with the bullæ found on the skin in certain nerve lesions.

Dr. Charles L. Dana[87] contributes a case of chorea in a man, thirty-four years of age, who suffered from acute rheumatism at the age of ten. From a study of the history of the case, Dr. Dana considers: (1,) That there is a close relationship between many of the chronic spasmodic disorders of irregular type and the chorea of Sydenham; (2,) That there is confirmation of the view, already generally accepted, that chorea is a vascular and humoral disease; (3,) That there is, in some cases at least, a microbe which produces this disease. He also emphasises the facts that we cannot explain chorea by finding any particular *seat* of the disease; that there is no special anatomical change invariably associated with it; and that though chorea is dependent on a specific kind of irritation of the cells, the irritant need not be of one kind—it may be a rheumatic poison or a diplococcus toxin.

Climatic Conditions as a Factor in Angio-neurosis.—Reference was made in last year's "Medical Annual" to epidemics of hæmorrhages and allied conditions. Further observation has made me more certain of the effect of climatic conditions on the manifestations here considered. To take a recent example. The case of hæmorrhagic diphtheria, photographed in *Plate IV*, occurred almost to a day coincidently with two cases of symmetrical ecchymoses, about the size of a crown-piece, on the arms, legs and chest, in two patients otherwise healthy. There was no preliminary stage of hyperæmia, no pain, nothing but the "black and blue" appearance of bruises where no bruising had been. One of these patients comes of a neurotic family, in which I have observed Graves's disease, severe angio-neurotic œdema, due to polyneuritis of septic origin, septic arthritis,

and erythema-urticaria. On the same day I was called to see a severe case of epistaxis, idiopathic in nature; and I also found exacerbations of the physical and mental symptoms in two or three cases of Graves's disease under observation.

Under the heading of "Coincidences in Practice," Dr. William O'Neill[88] gives particulars of a considerable number of cases of bleedings of various kinds that came under his observation, quite suddenly, in the month of March, 1895; and he states that these might perhaps be explained by atmospheric influences.

Dr. Andrew Macphail,[89] of Montreal, gives an account of an epidemic of paralysis in children, from notes of ninety-one out of one hundred and twenty cases, that occurred in the hot months of the year. Dr. Macphail, in dealing with the etiology, notes that the cases occurred in an area of geological faults, where contaminated waters might collect.

An account of a remarkable epidemic of dropsy was read by Dr. Kenneth McLeod at a meeting of the Epidemiological Society, in 1893. Dr. McLeod[90] defines the condition thus: "A specific disease, marked by the sudden appearance of general anasarca, mostly preceded by fever, vomiting, and diarrhœa, and accompanied by a rash, mild remittent fever, and disorder of the bowels; urine varying much, but rarely albuminous, and never suppressed; frequently attended by pains in the limbs, and almost always by dyspnœa, marked and progressive anæmia being a constant symptom. In the latter stages, pulmonary œdema and pleural and pericardial effusion were frequent. The mortality varied from 2 to 40 per cent., according to circumstances, death from lung or heart complications occurring at any period, and often suddenly. The duration of the disease was from three to six weeks. The disease was communicable by personal intercourse and conveyed by human agency, but its diffusion was feeble and greatly modified, and limited by its seasonal and climatic conditions."

With reference to the disease I have named erythema-urticaria, the following facts are interesting. A lady was sent from the Cape to this country by her medical attendant in hope of getting rid of a skin eruption, by a change of climate. I found the eruption was a fairly typical small whealed erythema-urticaria, associated with all the constitutional disturbances I had noted as occurring in that condition. While living in this locality she has been having attacks coincident with other patients subject to this disease. Some facts she states are noteworthy, viz., that, at the Cape, the medical men whom she consulted, some of whom themselves suffered from the same

eruption, pronounced it a new disease that had only recently appeared, but that was raging as an epidemic in various parts of the Colony; that it affected Kaffirs as well as whites; and that some cases in natives had been sent to hospital as cases of small-pox, but that the natives themselves, from the frequent recurrence of the disease in the same subject, and from other circumstances, knew it was a totally different disease, and had a native name for it.

From the fact that this malady seems to occur as a new disease at the Cape, and that cases of the same sort have been recently reported as new in various parts of the Continent and in this country, I cannot help thinking that it may possibly be a new disease, or an old one that had at one time been described under a different name, and entirely forgotten since its former appearances. That it is due to climatic influences, in the same way in which influenza is, and with which it may possibly have some connection, I have now not the slightest doubt.

Appendicitis is a disease with which one would not readily associate climatic conditions; and yet a kind of epidemic has been reported as occurring in Edinburgh. The connection of appendicitis with rheumatism and the rheumatic constitution may account for the apparent epidemic incidence of a disease that seems, at first thought, unlikely to be influenced by climatic conditions.

One remark more, and it must go as an isolated statement. In the locality where I have studied climate and angio-neurosis most carefully, Graves's disease is very common, and cancer prevails to an almost alarming extent.

Pathology of Angio-neurosis.—The pathology of the local manifestations of angio-neurosis has been explained by Kaposi,[91] on the lines laid down by Eulenburg and Landois. It is briefly this, that a stimulation of the vaso-constrictor nerves, or the inherent protoplasmic vitality of the capillary walls, causes a contraction of the small arteries in the papillary layer of the skin. This is followed by a paralysis of the vaso-constrictors or a stimulation of the vaso-dilators, which causes a hyperæmia of the part. The changes may stop at this stage, or go on to an effusion of serum into the skin, causing an infiltrated red patch; or, further, viz., to an outpouring of serum beneath the epidermis, giving rise to bullæ. Briefly, according to severity, the lesion may be macula, papula, tuberculum, vesiculum, bulla.

In the disease I have named general angio-neurotic œdema, the local lesion in severe attacks corresponds very closely to the hyperæmia of scarlet fever. At certain small points the upper surface

of the skin is raised up in the form of minute vesicles, and these often follow the distribution of particular nerves. I doubt the existence of a "paralytic stage" in this particular manifestation.

In the disease I have named erythema-urticaria, the "paralytic stage" may usually be well seen, but it is often extremely brief. In some cases, a central spot of maximum intensity, really a hæmorrhage, is very characteristic. In this manifestation the distribution of spots may be irregular or symmetrical, and in some cases the course of the nerves is fairly well mapped out. The rapidity with which the spots appear and pass through the various stages is remarkable. In this connection, I may record an observation that shows how very rapid the exudation of serum into and underneath the skin must be. A girl, subject to this disease, fell one day and bumped her forehead on the stair bannister. She was picked up *within four seconds* of the stroke, but within that period a perfectly hard, localized swelling of the size of a pigeon's egg, had appeared on the forehead. This was serous, not hæmorrhagic. The application of a pad of cotton wool and an elastic bandage reduced the swelling entirely in an hour or two.

As regards the part played by the vaso-constrictors and vaso-dilators respectively, it appears to me that the conditions I have described under general angio-neurotic œdema and erythema-urticaria are best explained on the theory that they are produced by a paresis, or want of tone in the vaso-constrictor centres. Our knowledge of the vaso-dilator centres and fibres, so far as it goes, shows that the effects of the dilator nerves are far less extensive and much less marked than those of the constrictor.

I have little to add to the theories of how the vaso-motor centres are influenced reflexly or directly. The only criticism I venture to make is on the subject of local action. The statement is made[92] that stimuli applied to the skin may act locally upon the vessels of the papillary layer, and that this is illustrated by the red line that appears after a thumb nail pressure, and the œdema produced by the poisonous stings of insects. I doubt if this theory of purely local influence can stand the test of rigorous examination. Reflex action is not so much a thing of time as of condition or state; and the reflex "condition" is really present in almost every part of the skin or tissues, waiting only a local cause to determine its appearance reflexly (either at the spot or at some other spot), such as the thumb line, or the rubbing which is followed by urticarial wheals. One may reasonably doubt the completeness of the proof that vessel walls re-act apart from nervous influences.

Dr. Lazarus-Barlow[93] has recently investigated the pathology of œdema ; and from his experiments he concludes that the presence *in situ* of the metabolic products of functional activity plays a part in the causation of œdema even greater than that of simple starvation of the tissues, which, he had proved, was a factor in causing œdema ; *i.e.*, poisoning superadded to starvation increases the amount of œdema. He regards œdema as the result of an effort on the part of the circulatory system to supply an extra amount of nutriment to the damaged tissues requiring it, the œdema being increased by causes interfering with the onward flow of fluid from the part. How the demands of the tissues are intimated to the bloodvessels is unknown ; but Dr. Lazarus-Barlow holds that the active dilatation of the arteries is effected by some peripheral mechanism which is largely independent of the vaso-motor system.

Dr. Edward Blake,[94] in dealing with the Pathological Anatomy of Joint Strain, lays emphasis on the fact that nerve injury causes an engorgement of the part with the *débris* of katabolic material, and that these accumulated products of disassimilation, which are themselves nerve poisons, set up a true peripheral neuritis auto-toxic in character ; hence, a vicious circle is maintained.

Some time ago I pointed out,[95] and I have since then often verified clinically, that in a patient with vaso-motor ataxia during chloroform administration, the heart failed before respiration, while the substitution of ether for chloroform removed this danger. Dr. Leonard Hill[96] has since then produced experimental evidence of this fact.

Treatment.—In the first place, reflex irritation is so commonly a cause of angio-neurotic manifestations, that a search for a peripheral source of irritation should be a matter of routine. When one has seen a few cases recover when a peripheral condition, unsuspected as a cause, because apparently quiescent, has been attended to ; and when one considers also some cases where the last link in what proved to be the reflex chain was so distant as to be apparently unconnected with the first ; then one realizes the great importance of neglecting no possible source of irritation. We are beginning to realize, thanks to the teaching of Greaves and John Hilton and others who have followed in their steps, something of the interdependence of affections of different parts. The connection between migraine and eye-strain may be said to be fairly widely recognized ; the connection between rectal ulcer and the symptoms it gives rise to in other parts of the body is scarcely so well known ; and he would have been a bold theorist who would have causally connected epilepsy with Dupuytren's contraction.

But when the source of irritation has been removed, the effect to

which such a cause gave origin may continue as a habit for some time, even a long time, after the cause has ceased to act. This must not be forgotten; and in the treatment of such conditions as migraine, epilepsy, chorea and asthma, the depraved and vitiated nervous system must be treated before a permanent cure is established. For this, nerve tonics are required, not nerve depressants; and the results produced by strychnine and arsenic are sometimes very surprising.

The treatment of angio-neurosis in general has already been outlined in last year's "Medical Annual,"[97] and the remarks I now make have reference to particular conditions.

The nature and amount of toxic material necessary to produce a given amount of constitutional disturbance could scarcely be better shown than in a case reported by Dr. William Carter,[98] of Liverpool, in which the presence of a cavity that yielded, on pressure, a single drop of pus had for twelve days sufficed to raise the temperature to 104·4° F., and produce rigors, profuse perspirations and rapid emaciation. In cases where a local source of toxic material cannot be discovered, the anti-toxic function of the liver ought to be remembered; and it will often be found that many angio-neurotic manifestations, both physical and psychical, will disappear when the functions of that important organ have been attended to.

In the treatment of Graves's disease and allied conditions, there is no greater temptation than to search for a specific for the disease in place of a remedy that will relieve the patient. It will often be found that relieving the most urgent symptoms by appropriate remedies, and building up the patient's general health, will "cure" more quickly than the exhibition, in turn, of all the "specifics."

A word may be added on the surgical treatment of Graves's disease. Several cases of improvement or even of cure of Graves's disease after operation on the thyroid have been reported; and in nearly every instance this is assumed as evidence in favour of the "thyroid cause" of exophthalmic goitre. Now, the "thyroid theory" may or may not be true; but the evidence from operation is no proof. Many cases recover under hospital regimen without operation; and although others may recover after an apparently necessary operation on the thyroid, it is just possible that an operation, say, removing a piece of the sterno-mastoid or other muscle, or even the great toe, would have a similar good effect. One case of mine, a severe one, improved under treatment by operation on the thyroid, and two or three months in hospital. Another case, and a much worse one, became almost quite well at home, and without operation. Dr. Rabagliati's[99] lesson, which he learned by operating on the umbilicus for perimysitis rheumatica,

should be laid to heart; this operation cured in many cases, as did also oöphorectomy, but neither operation was necessary, as he found out afterwards, to effect a cure.

With reference to the treatment of peripheral neuritis with its associated pain, œdema, and other manifestations, a subject that is being much discussed, I would point out the value of the weak constant current, the positive pole being applied to the part that this pole has discovered to be tender. Dr. James Cagney[100] concludes his remarks on the treatment of peripheral neuritis in these words: "I have spoken chiefly of electricity, because it is the least known, the least used, perhaps in this country the most despised of therapeutic measures; whereas in regard to disease of the peripheral nerves, it is also the most useful, the most directly applicable, the most indispensable of all."

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Life Assurance.

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SELECTION OF A LIFE.

In the selection of lives for Life Assurance, the individual must be regarded from four principal points of view: (I,) Family History; (II,) Personal History; (III,) Present Condition; (IV,) Environment; *i.e.*, social state, place of residence, habits and mode of life. The various questions bearing on life assurance will therefore be discussed in the above mentioned order.

I.—FAMILY HISTORY.

It has been stated, "that it is the man himself who comes before us for examination—his habits, his health record and his circumstances, very much more than his ancestors, and on whom our attention must be concentrated." This is all very true, but at the same time much valuable information can be derived from the family history, provided it is properly handled. The tendency now-a-days in assurance practice is to restrict enquiry as regards hereditary diseases to *Consumption*, *Cancer*, *Gout*, *Rheumatism* and *Insanity*. In addition to these affections—their relation to life assurance we shall discuss later on—there are some other conditions of family history which are of service in estimating the value of any given life. The most important is an early "*breaking down age*," *i.e.*, the history that the father, mother, brothers, sisters or other near relations of the applicant have died at a comparatively early age, say fifty-five to sixty-five from diseases indicating degenerative changes. This is just the class of case in which the extra risk is best met by an Endowment Policy, payable at an earlier period than the average "breaking-down age" in the family of the individual under consideration. Another point worthy of mention is the proclivity in certain families to catch infectious diseases. In the case of a medical student or nurse applying for assurance, the existence of such a tendency might justify an addition to the premium. Then there is a history of a general *want of robustness* in the family, as shown by the early deaths of many members of it from various

diseases and independent of a tendency to any special disease. This variety of family history is chiefly of importance in the case of applicants under thirty. In the event of an applicant over thirty coming with such a history, if he is in good condition, the probability would be that he is an example of the survival of the fittest, and that he is therefore a life to be accepted at the ordinary rate.

Phthisis.—The examination of recent assurance statistics has shown that the additions made on account of a *phthisical family history* have been somewhat excessive. Inasmuch, however, as phthisis is particularly the disease which is the cause of loss to assurance companies in the first seven years of assurance, it behoves the examiner to give due weight to the history of a consumptive taint in the family. In this respect it is most important to bear in mind that the terms "death after child-birth," "asthma," and "pleurisy," often cover, or conceal death from phthisis. It is now so well recognized in assurance circles that death after child-birth is frequently the result of phthisis, that unless there is distinct evidence to the contrary, it is well to assume that such was the case. Death from asthma in persons under middle age is so uncommon, that some other explanation must be sought for the fatal termination, and in many instances phthisis will be found to be the cause. Pleurisy, again, is very commonly of tubercular origin, and carefully collected statistics have shown that within five years after the occurrence of what was apparently a simple attack of pleurisy nearly half the patients were dead of phthisis. This point is also of importance in regard to the history of the previous health of the applicant, inasmuch as the history of an attack of pleurisy in an individual, especially if coupled with a family predisposition to phthisis, should raise the gravest suspicion in respect to the assurability of the applicant.

In considering the bearing of heredity and phthisis the classification suggested by Dr. Reginald Thompson is a convenient one from a life assurance point of view, and it is given in a somewhat modified form below. It must be remembered, however, that it is quite impossible to reduce to mathematical precision the exact influence that the varying degrees of family history of phthisis have on the expectation of life of the individual.

The different degrees of the heredity of phthisis may be divided into four classes :—

A.—Implication of one brother or sister, or one collateral relation.

B.—Implication of brother and sister ; many collaterals with sexual limitation ; the father's heredity alone.

C.—Implication of grandparents ; the father with one other of the

children ; the implication of many brothers and sisters ; the mother's heredity alone.

D.—Father with many members of the family ; mother with other members of the family ; grandparents and parents ; double heredity.

In view of the great importance of *age* as a factor in the development of phthisis, it is necessary to divide the periods of life into four : First Period before twenty-five years of age ; Second Period between twenty-five and thirty-five ; Third Period between thirty-five and forty-five ; Fourth Period after forty-five.

First Period.—Reject all applicants under twenty-five with a distinct family history.

Second Period.—Class A may be taken at the ordinary rate, if the applicant is robust, of good weight and in comfortable circumstances. If there is any doubt, the application should be deferred until the age of thirty is attained.

Classes B and C should be taken with an addition of five and seven years respectively, with the stipulations mentioned under A.

Third Period.— Class A may be taken at the ordinary rate. Class B with three years' addition, and Class C with five years' addition.

Fourth Period.—Classes A, B and C may be taken at the ordinary rate. Class D still requires much caution in the selection of cases, and some offices refuse all cases of double heredity. In view of the great risk during the period of child-bearing, it is not advisable to accept female lives under the age of forty-eight.

Of more importance than the exact class of heredity to which the applicant is to be referred is the personal examination. A weight above the average, a well-formed chest, and the appearance of robust health, are of more importance than pedantic adherance to any rules. If these points are favourable, as well as the personal history and mode of life of the applicant, it would probably be quite safe to accept all lives above forty years of age at the ordinary rate ; below this period some addition would be necessary.

Cancer comes next to consumption in regard to the frequency of hereditary transmission, but, unlike the latter, it is an increasing risk, *i.e.*, the liability to cancer increases for the most part with the age of the individual. Females are more liable to cancer than males ; hence great care must be exercised in accepting female lives over the age of forty, if there is a cancerous family history. If two or more deaths from cancer have occurred in the applicant's family, a considerable addition to the premium is necessary. If he is over fifty it might be advisable to decline the life.

Gout.—That gout is hereditary hardly anyone will deny, and its

transmission may sometimes be traced through several generations; or it may skip one generation and appear in the next. The gouty inheritance, instead of giving rise to any acute symptoms, may manifest itself in a more or less latent form, as dyspepsia, skin affections, and a tendency to degenerative changes in the heart, vessels, and kidneys. The signs of inherited gout are commonly detected before the age of thirty-five; whereas in acquired gout the first attack is usually later. If one parent or grandparent has had gout, the applicant may be taken at the ordinary rate, if he himself has not suffered and is otherwise eligible. If two members of the family have suffered from gout, an addition of from three to five years should be made. Where there is a gouty inheritance, especial care must be taken if there is any suspicion of defective action of the liver or kidneys, if the vessels are rigid or if the applicant is excessively heavy.

Rheumatism.—The term rheumatism is used in such a loose manner that it is difficult to obtain any precise information as to the part heredity plays in the development of the disease. There is however ample evidence to prove that rheumatism is hereditary, and the importance of heredity as a predisposing cause of rheumatism is well illustrated by examples of extremely rheumatic families given by Drs. Goodhart and Archibald Garrod. Though the question is usually asked of applicants for assurance whether there is a rheumatic family history, it is very rarely indeed that an addition to the premium is made on this score, unless there is also the history of an attack of acute rheumatism in the applicant.

II.—PERSONAL HISTORY.

Next in importance to the examination of the applicant comes a careful enquiry into his past history. In order to assist his memory most Assurance Offices have a list of diseases as to which the applicant is questioned. Before entering into these, attention must be directed to the importance of not recommending for assurance an applicant who is still suffering from some slight ailment, or who has only recently convalesced from an acute illness. The slight ailment may be the starting point of some severe, possibly fatal disorder, and after an attack of measles, typhoid fever, or other depressing malady, consumption not unfrequently follows.

Fever.—The history of fever in the past, provided the attack occurred some months previously, would not affect the proposal. A recent attack of scarlet fever would suggest great care in examining the urine. As regards malarial fever, everything depends upon the time that has elapsed since the last attack, the absence of signs of malarial

cachexia, such as an enlarged spleen, in the applicant, and whether he has any intention of returning to the locality where he contracted the fever.

Acute Rheumatism.—An attack of acute rheumatism sufficiently severe to keep the patient in bed two or three weeks, and to incapacitate him from his occupation for six or seven weeks would require the addition of an equivalent to seven years at the age of thirty. If there has been more than one attack, the life would not be assurable until at least ten years after the last attack. The question of cardiac complications will be considered later on.

Gout.—It seems that in the past, applicants with a gouty history have not been rated up sufficiently. An attack of gout, however slight, requires the addition of at least three years. But as Dr. Symes Thompson has pointed out, "the altered style of living and inherited susceptibility favour the development of latent constitutional changes, which have taken the place of the familiar seizures of former years." These latent and ill-defined cases entail more risk than a *bona fide* attack of acute gout, and it is more difficult to appraise their value. The death rate of gouty subjects is especially heavy between fifty-five and sixty-five; hence this class of case is particularly suitable for an Endowment Assurance, though of course there must be an addition made to the premium. An addition of 10 per cent. is not sufficient for a whole life policy, at least 20 per cent. is necessary; an endowment policy might be taken with less.

Phthisis and Hæmoptysis.—The history that the applicant has suffered from symptoms of phthisis in the past, or that he has had an attack of hæmoptysis, would require that he be rejected, should there be a family tendency to consumption, or should he be of light weight and feeble physique. Under any circumstances, at least ten years should have elapsed since the occurrence of hæmoptysis, or other symptoms of phthisis, and the applicant should be at least thirty-five years of age, and his personal condition and environment should be excellent to allow of his being accepted, even with an addition. As already mentioned the history of a previous attack of pleurisy is suggestive of a tubercular tendency.

Strumous Glands.—At one time great stress was laid on the history of enlarged glands, but thanks in large measure to improved methods of treatment, enlarged glands are not met with in the classes coming for assurance so frequently as formerly. If the applicant is in good health, and many years have elapsed since the glands were affected, he might certainly be taken at the ordinary rate, provided his family history was good.

Insanity.—The mean duration of life is undoubtedly impaired by insanity ; it is however only in the acute forms that there is any immediate danger to life. Assurance Offices do not usually accept lives of those who have suffered from insanity in the past, except under very favourable circumstances.

Epilepsy, if of hereditary origin, is a bar to assurance. Where, however, the disease is not inherited, the applicant is in comfortable circumstances, and at least ten years have elapsed since the last attack, then the proposal may be accepted with an addition.

Asthma.—The history of recent asthma should lead to the rejection of a proposal. If, however, some years have passed since the last attack, and the applicant is not emphysematous, he may be accepted, though it would probably be wise to make an addition.

Liver Affections.—An attack of jaundice in early life is probably of a catarrhal nature, and may therefore be disregarded. In middle life it is more likely to be due to gall-stone colic ; if this is the case and the attacks have been frequent and severe, the proposal had better be declined ; but if some years have elapsed since the attack, the life may be taken with an addition. Any trace of jaundice at the time of the examination should lead to the postponement of the application. The history of slight piles would not affect a proposal, but severe piles accompanied with much bleeding should lead to a careful enquiry into the habits of the applicant, so as to exclude cases of commencing cirrhosis of the liver.

Syphilis has not yet received the attention from directors of Assurance Companies which its importance demands. Dr. Moxon, for example, has shown that the average age of those dying of visceral syphilis is thirty-seven years. The effect of syphilis on the vascular system and consequent tendency to aneurysm and cerebral thrombosis, and the damage it causes to the nervous system, should be borne in mind in estimating the risk of accepting an individual with a syphilitic history. If the symptoms of the secondary stage were mild, and the applicant was carefully treated, then he might be accepted at the ordinary rate, after an interval of two to three years from the appearance of any symptoms. If there has been any evidence of tertiary mischief without permanent structural, or organic injury, the life might be accepted with the addition of five years and upwards according to the age of the proposer, provided the disease was apparently arrested, or cured. If there is any resulting structural, or organic lesion, the application should as a matter of course be declined.

It must be borne in mind that the history of syphilis in a man

whose family, or personal history, is not quite satisfactory might suffice to turn the scale in an adverse direction.

Stricture.—In the past too little importance has been attached to the history of gonorrhœa followed by stricture; yet it cannot be doubted that much of the mortality in the later years of life, due to bladder and kidney trouble, is the result of this disease. A slight degree of stricture requires an addition; the more severe forms should be declined.

III.—PRESENT CONDITION.

The most important point in life assurance is the present condition of the applicant as tested by a careful physical examination. The first step is to take the height and weight of the individual, and in addition to the mere weight, it is most important to note whether the weight is increasing, or decreasing.

Height, Weight, and Figure.—It has been shown by experience that men of from five feet six inches to five feet nine inches in height are the most capable of prolonged physical exertion, and there can be no doubt that in persons of unusual height there is extra strain on the heart. From a life assurance point of view, men of moderate stature are therefore to be preferred to those of six feet and upwards. Of even more importance than the mere height of the individual is a due proportion between height and weight. The appended table gives the standard at the age of thirty with sufficient accuracy.

Height.		Standard Weight.			15 per cent. under Weight	15 per cent. above Weight.	Circumference of Chest, medium.
ft.	in.	stone	lbs.	lbs.	lbs.	lbs.	inches.
5	0	8	0 =	112	95	128	33½
5	1	8	4 =	116	98	133	34
5	2	9	0 =	126	107	145	35
5	3	9	7 =	133	113	153	35½
5	4	9	13 =	139	118	160	36
5	5	10	2 =	142	120	163	37
5	6	10	5 =	145	123	166	37½
5	7	10	8 =	148	125	170	38
5	8	11	1 =	155	131	178	38½
5	9	11	8 =	162	138	186	39
5	10	12	1 =	169	144	194	39½
5	11	12	6 =	174	148	200	40
6	0	12	10 =	178	151	205	40½
6	1	13	0 =	182	154	210	41

A margin of 15 per cent. in either direction is admissible under ordinary circumstances. Some authorities allow of 20 per cent., but the mortality of the light weights from tuberculosis and other wasting diseases is so great that applicants for assurance who are more than 15 per cent. under weight should only be accepted after a most careful and rigorous examination. Where there is a marked family history of consumption the case had better be declined, if the applicant is under thirty years of age. As regards over-weight there does not seem to be the same risk, and it is not until the excess becomes 20 to 25 per cent. that there need be any apprehension. The extra mortality among the over-weights is due chiefly to diseases of the brain, heart, and liver, and there is a tendency to sudden death. In cases, therefore, of over-weight, early deaths of parents or other relations from diseases of a degenerative nature should suggest great caution in accepting the life.

The table given above has been calculated for men of the age of thirty ; about three-quarters of a pound a year may be deducted, or added, according as the applicant is younger, or older than thirty.

In addition to height and weight, the measure of the *circumference of the chest* will assist in arriving at a decision. In the table given above it will be seen that a man five feet high ought to measure thirty-three and a half inches round the chest above the nipples, and for every additional inch in stature, the circumference of the chest should be increased by about half an inch. A full inspiration should increase the circumference of the chest from one and a half to two inches. The shape of the chest is another point to which attention should be directed ; a flat chest suggests phthisis, and a barrel-shaped chest, emphysema. As long as the circumference round the abdomen does not exceed that round the chest above the nipples, exception need not be taken to the figure of the applicant, but a protuberant belly is not desirable from a life assurance point of view.

Complexion, Eyes, and Ears.—After noting down the height and weight of the applicant, attention should be directed to his complexion. Injected capillaries of the cheek should suggest enquiry as to habits of chronic alcoholism, or the existence of valvular disease of the heart; sallowness or jaundice points to liver disease ; pallor to anæmia and wasting diseases. Extreme contraction of the pupil may be a symptom of tabes ; inequality should excite suspicion of general paralysis, aneurysm, etc. Complete blindness necessitates an addition on account of the extra risk of accidents. If there is a *discharge from the ears,* or deafness, the ears should be carefully examined. In the event of there being

polypi or granulations within the tympanic cavity, any evidence of disease of the temporal bone, abundant offensive discharge of long standing, pain or tenderness in the neighbourhood of the ear, giddiness, or affection of the facial nerve, the application should be rejected.

If there is a moderate amount of discharge, and not of an offensive nature, and an absence of all the symptoms mentioned above, the case should be referred for treatment, and might be accepted, though possibly with an addition, when there has been no discharge for a year or more.

Chest.—The applicant should now be stripped to the waist, and the chest carefully examined. The slightest evidence of existing *phthisis* should lead to the rejection of the application. The same rule holds good for candidates with a doubtful family history, in whom there is evidence of old mischief. Cases are occasionally met with in which there are merely some impairment of resonance and deficient expansion with bronchial breathing at one apex; if under these circumstances the applicant has a good family history, if his general condition, especially as regards weight, is good, if the attack dates back at least eight or ten years, and the applicant is thirty years or upwards, the life may be recommended with an addition.

Heart.—In the examination of *the heart* it is most important to note the area of cardiac dulness, and the exact position of the apex beat; hence no examination is satisfactory unless the applicant's chest is bare. Displacement of the apex beat, increased or diffused impulse, and increased area of cardiac dulness, should lead to a careful examination in order to discover the cause. At one time the mere existence of a cardiac murmur of organic origin was sufficient to exclude an application for assurance, but increasing experience has shown that under favourable circumstances, even well-marked examples of valvular disease may be accepted at an increased premium.

As regards cases of aortic regurgitation, there is a consensus of opinion that they are not assurable on any terms. A systolic aortic murmur may indicate merely some roughening of the valve, so that there may be but little extra risk to life. In considering cases of mitral disease, the condition of the heart as regards the existence of hypertrophy, or dilatation, the frequency, irregularity, or intermittency of its action are the most important elements in arriving at a decision; the exact murmur (aortic regurgitation excepted) is of less moment. The effect of exertion and posture on the heart's action must always be borne in mind. Some murmurs are only audible after exertion; even walking sharply up and down a room

will suffice to cause a murmur to be recognized which was previously inaudible, and, on the other hand, the murmur of mitral stenosis is sometimes only heard when the individual is in the recumbent position.

Given an applicant with mitral disease, whose pulse is regular, of normal frequency and volume, who is not rendered short of breath by moderate exertion, and who is in favourable circumstances as regards his environment, then the life may be taken with an addition of from seven to fifteen years. On the contrary the application should be rejected, if the pulse is too frequent, irregular or intermittent, if there is breathlessness or any tendency to cyanosis after exertion, and especially if the heart affection is due to recent attack of acute rheumatism in a young subject.

Pulse.—A *too frequent pulse* may be due to the excitement of the examination, or may be merely the result of nervousness. There are usually other signs to indicate its nervous origin, and, as the proposer becomes calmer, the pulse lessens in frequency. Be the explanation what it may, over-frequency of the pulse is not a favourable sign from a life assurance point of view. It is met with in most forms of cardiac disease, and it is an early indication of phthisis and of intemperance. Extreme infrequency of the pulse, as for instance a pulse below fifty-six, should excite suspicion. Attention should also be directed to abnormal rigidity or increased tension of the pulse.

Digestion.—After examining the condition of the heart and pulse, careful enquiry must be made as to the manner in which the *digestive functions* are performed. A furred tremulous tongue and foul breath should suggest the possibility of chronic alcoholism. If there is any suspicion of this the patient should be placed on a couch, and the abdomen examined in order to detect any alteration in the size of the liver. The existence of piles should also lead to a careful enquiry as to habits.

If the applicant has resided in a malarious district, the condition of the spleen should be noted.

Hernia.—The extra risk due to the existence of a rupture is usually met by an addition of one to two years, provided a well-fitting truss is worn. It has yet to be proved that any addition is needed on account of a rupture.

Urinary Organs.—Lastly, the state of the genito-urinary organs must be enquired into. The effect of stricture has already been discussed.

Of late years all Offices have very rightly insisted upon the routine examination of *the urine*. The examiner should require the urine to be passed in his presence; this ensures a fresh specimen, and prevents

fraud. The specific gravity is usually taken ; in health this varies between 1015 and 1025, but a single specimen is often lower than 1015 and occasionally above 1025, without leaving any pathological significance. It is more important to test the re-action, as unless the urine is already distinctly acid, or has been acidulated by the addition of acetic acid, albumen will oftentimes not be precipitated on boiling.

For life assurance purposes the plan of boiling the upper stratum of urine in a test tube is of sufficient delicacy to detect albumen. If opalescence is produced by boiling, nitric acid must be added to exclude phosphates ; if there is no change on boiling, the absence of albumen may be confirmed by the cold nitric acid test. The re-action comes out more distinctly if the urine be poured on the acid, rather than allowing the acid to trickle down the side of the test tube, the urine having been poured in first. To detect sugar Fehling's test is the most convenient. It is desirable that the sulphate of copper and alkaline solutions should be kept in separate bottles, and only mixed at the time of examination. Equal quantities of the two solutions should be boiled, and if after boiling, the solution is of a deep blue colour and quite translucent, some of the urine to be tested should be boiled and added to the boiling Fehling solution. If sugar is present it will usually be at once recognized, owing to the precipitation of the yellow sub-oxide of copper. If there is no precipitation or decolorisation of the solution, heat may be applied to the mixture of urine and Fehling's solution ; but anything like prolonged boiling must be avoided, as there are other reducing agents, occasionally present in urine, which will throw down the sub-oxide of copper after prolonged boiling.

The detection of a considerable amount of albumen, especially in urine of a low specific gravity, and the presence of casts should lead to the rejection of the application. There is, however, a series of cases to which the terms "functional," "cyclic," or "intermittent," albuminuria have been applied. This is a class of cases which causes more trouble to the medical examiner for life assurance than almost any other. At the present time, sufficient data have not been collected upon which to found any definite conclusions. The discovery of the so-called functional albuminuria is of comparatively recent date, and we do not yet know what the after history of those subject to this condition will be. The time may come when it may be possible to differentiate between cases of albuminuria due to temporary causes and those due to commencing organic disease of the kidneys ; at the present time, however, the only safe course is not to recommend for assurance any applicant whose urine contains

albumen. Supposing the applicant is otherwise healthy, under forty years of age, free from cardiac hypertrophy and rigid vessels, and without a family history of Bright's disease, it would be advisable to defer the case for three to six months, and if the urine were found to be free from albumen, the life could then be accepted. If the urine still remained albuminous, a further period of probation might be granted. Much the same course should be taken as regards glycosuria. There are cases of temporary glycosuria, probably connected with gouty dyspepsia, which may be taken with an addition, if the urine at the time of examination is free from sugar, and there is no family history of diabetes. Otherwise, the presence of sugar in the urine, like that of albumen, is a bar to life assurance.

IV.—ENVIRONMENT.

The remaining point to be considered in regard to life assurance is the environment of the applicant. Under this head are included the social state, occupation, habits and mode of life, and residence.

Social State.—The *social state* of the individual, *i.e.*, whether he is married or single, has a certain amount of influence on the duration of life, and must therefore be taken into consideration in the case of applicants for assurance. Statistics show that married people live, as a rule, longer than single people. That this should be so is no more than was to be expected. In the first place, selection is in favour of the married, as the robust are more likely to marry than the delicate; secondly, if a man marries, the presumption is that he has some means; thirdly, the regularity of life, both as regards meals and sleep, has a beneficial effect; and lastly, matrimony is salutary from a physiological point of view The only exception to the rule, that married people have a better expectation of life than the single, is that in women the risk of the married is somewhat higher than that of the single during the child-bearing period.

Occupation.—The *occupation* of the applicant is oftentimes a decisive factor in the case. Take, as an illustration, a man of bad family history as regards consumption, who is somewhat below weight, and not very robust looking, but otherwise healthy. If the applicant is a man whose occupation takes him constantly into the open air, as, for example, farming, the life might be taken, though possibly with an addition; whereas, if he is engaged indoors, as a clerk, or linen-draper, the application is not so likely to be entertained. On the other hand, a man whose heart is not quite sound stands a better chance of being accepted for assurance than a man who has to lead an out-door, active life.

Again, there are certain occupations which exercise a very predjudicial effect on the lives of those engaged in them. Among these may be mentioned the liquor trade. Most Assurance Offices make a considerable addition, averaging about £1 per cent., for all those who have anything to do personally with the manufacture or distribution of intoxicating liquids. Butchers, bakers, and plumbers also experience a high rate of mortality.

Habits.—The question of *habits* is an exceedingly difficult one to get correctly answered. The experienced examiner will obtain more accurate information by attention to the state of the tongue and breath, the condition of the conjunctivæ, and the presence of tremor of the hands, and dilated capillaries of the cheeks, than by questioning the applicant. Should there be any suspicion of excess in drink, the application should be rejected. It must be borne in mind that reformed drunkards, even though they adopt and continue to practise total abstinence, are not good lives. The excess of past years has probably left its mark in degeneration of vessels, liver, and kidneys. In cases, therefore, of people who describe themselves as total abstainers it is most important to know how long they have been so, and what their habits previously were.

It is well also to make some enquiry as regards the amount of exercise taken. The typical man about town, who takes but little exercise, and who eats and drinks more than is good for him, is not a satisfactory candidate for assurance.

Residence.—Owing to the wandering life led by so many people now-a-days, the residence of the applicant for assurance is not of much importance, except as regards residence in tropical or very unhealthy climates.

After a careful examination of the applicant, and a consideration of his condition from the various points of view which have been described above, the medical examiner will have to sum up the evidence for and against the assurance of the life in question. In making the recommendation it is well to bear in mind the applicant's expectation of life. A rough and ready, but at the same time tolerably accurate rule for arriving at this is that given by Walford. Between the ages of twenty and forty-five use the *fixed* number, 96; deduct the present age of the person whose expectancy you desire to know from this number, and the half of the remainder will give the expectancy. Between twenty and thirty the result will hardly come up to the average, and over forty it is slightly in excess. For ages above forty-five take 90 as the fixed number, and proceed as before.

The following table will show the years and decimal parts of a year that persons at each age may be expected to live, according to the healthy male table, deduced from the mortality experience of Life Assurance Companies.

Age.	Expectation of Life.	Age.	Expectation of Life.	Age.	Expectation of Life.	Age.	Expectation of Life.	Age.	Expectation of Life.
15	46·161	25	38·405	35	31·016	45	23·792	55	16·962
16	45·292	26	37·658	36	30·286	46	23·079	56	16·316
17	44·438	27	36·908	37	29·560	47	22·375	57	15·679
18	43·609	28	36·162	38	28·838	48	21·679	58	15·052
19	42·817	29	35·419	39	28·118	49	20·989	59	14·435
20	42·061	30	34·681	40	27·399	50	20·306	60	13·830
21	41·326	31	33·946	41	26·679	51	19·627	61	13·237
22	40·603	32	33·213	42	25·956	52	18·951	62	12·659
23	39·879	33	32·481	43	25·233	53	18·281	63	12·095
24	39·147	34	31·748	44	24·511	54	17·618	64	11·547

SELECTION OF AN OFFICE.

Form of Policy.—To no class of the community is Life Assurance more important than to the general practitioner; as a rule he has nothing but his own exertions on which to depend, and not infrequently he has had to contract a loan in order to make a start. Moreover, the feeling of the community at large is so much in favour of employing a married doctor, that interest and inclination will probably induce him to marry early. All these are reasons why he should assure his life. But he can hardly expect to be taken on more favourable terms than the general bulk of the population, as statistics show that the medical profession compares unfavourably, as regards the expectation of life, with other professions; in fact, it takes quite a high place in the table of comparative mortality. Having agreed then that there are special reasons for medical men to assure, it remains to determine the most suitable *form of policy* for their varying needs, and the office to which they should apply. At the commencement of a medical man's career he is likely to be considerably hampered as regards means; it is therefore advisable that the premium paid should be the lowest compatible with the choice of a safe office. One way of meeting the difficulty adopted by some offices is the *half premium system*. By this plan half the premium is paid during the first five years; at the end of this the full premium, plus a sum sufficient to cover the deficiency on the first five years. The following figures, taken from the prospectus of one of the

leading companies, will explain the matter better than any verbal description. Supposing a man of twenty-five wishes to assure £100 at death with profits, the premium for the first five years would be £1 2s. 6d.; and after that time for the remainder of life, £2 12s. 3d., as against £2 8s. 1d. for an ordinary whole life policy with profits.

The plan adopted by another office is that of the *reduced annual premium*, under which the assured is called upon to pay only four-fifths of the ordinary annual premium. The remaining one-fifth is allowed to remain as a debt on the policy at 5 per cent. interest, to be discharged in whole or in part, as circumstances will admit, by allotments of bonus, such allotments being precisely the same as if the full premium had throughout been paid.

A third plan is the *deferred profit tables*, under which the benefit of a low premium is secured with ultimate good profits after the average duration of life.

By taking out policies of the above described character, a medical man may make provision for the £500 or £1000 which he requires in starting practice, or when he marries; but there comes a time for most men when they are in a position to make a more ample provision for the future.

Three classes of assurance are becoming increasingly popular, viz., *Policies in which the premiums are distributed* over a limited number of years; *Endowment Assurances;* and *Investment Policies.*

In the first class it can be arranged to pay the premium for a limited number of years, and then to cease, the policy being payable at death. This is an excellent plan for a man in good practice who wishes to assure to the best advantage, and who realizes that as his children grow up his expenses will increase, and that it will be a great relief if he can pay off the premium in a fixed number of years. Naturally, the payments are heavy. At the age of thirty the premium for £100 in eleven payments amounts to £4 12s. 10d.; in twenty payments, £2 19s. 1d.; in twenty-eight payments, £2 9s. 3d. (in all three cases the profits are deferred) as against £2 13s. 5d. for a whole life policy; but then the assurer will have the satisfaction of knowing that at the end of eleven, twenty-two, or twenty-eight years his payments cease.

If the medical man has no family, or has already provided for them, the *Endowment Plan* of assurance offers a ready method of making provision for old age, or for a time when there is a probability of a diminution in professional receipts. For a man of thirty, who wishes to secure £100 with profits at the age of sixty-five, or previous death, the premium is £3 2s. 2d. This method of assurance is being

largely adopted. It has two great advantages: one is, that the number of payments is limited; the second is, that the assured, if he lives to the stated age, will have the disposal of the money, so that if he should by chance be in necessitous circumstances, he would have something to fall back on.

Lastly, the *Investment Policy* deserves attention. This is a system under which a limited number of premiums is paid, and every premium secures a fixed and definite benefit (according to table), so that the payments may be discontinued at any time without forfeiture.

Choice of Office.—To give advice as to the choice of an office is a matter of some delicacy. It may at once be frankly stated that all the offices whose names are given at the close of the volume, have their warm adherents, and it would consequently be impossible to recommend any particular office without doing grave injustice to the others. Two great divisions of assurance offices may be made, viz., the Mutual and the Proprietary. The tendency at the present day is certainly in favour of the former; nevertheless, the latter possess an element of stability in the shareholders' capital, which is wanting in the former. On the other hand, in the Mutual Offices, as there is no shareholders' capital requiring interest, the assured receive the whole of the profits; so that in regard to these two classes there is something to be said in favour of each. Most men will solve the difficulty, as to choosing the best office, by not putting all their eggs into one basket, but will distribute their assurances over two or more offices.

One assurance society, which occupies an unique position in relation to the medical profession, may be mentioned by name; this is the Medical, Sickness, Annuity and Life Assurance Society, which is an assurance company against sickness and accidents, and provision can also be made for life assurance and annuity. Membership of the society is limited to registered members of the medical profession and licentiates of dental surgery residing in the United Kingdom. For an annual payment of £6 7s. a man of twenty-five can secure £4 4s. per week during incapacity, whether caused by sickness or accident. The full amount of sick pay is payable for the first six months of protracted illness, and one-half the full sick pay for the remainder of the same attack. All sick pay and premiums cease at age sixty-five. This is a mutual society started by medical men for medical men; it is most economically and efficiently managed, the expense of management amounting to somewhat less than 5 per cent. of the premium income; it therefore deserves the warmest

support of the medical profession. It has already proved of the greatest benefit to a large number of members, and much anxiety and distress would be prevented if all men engaged in general practice joined the Society.

And here it may not be out of place to direct attention to the Society for Relief of Widows and Orphans of Medical Men. This Society occupies a position intermediate between that of an Assurance Company and a Charitable Institution. Any person duly registered under the Medical Act, and resident within a radius of twenty miles from Charing Cross, is qualified to be proposed for election as a member of the Society. The widow of a member who has no certain income or provision exceeding the yearly value of £80, is eligible to receive such relief from the Society as the Court of Directors shall determine. The maximum allowance is £50 a year for the widow, and £12 a year for each child under sixteen years of age. The annual subscription is £2 2s.

Part III.—NEW TREATMENT.

A Dictionary of New Treatment in Medicine and Surgery, 1896.

ABDOMINAL INJURIES. *A. W. Mayo Robson, F.R.C.S.*

The views of M. Chaput,[1] of which a synopsis is given in the "British Medical Journal" (April 20, 1895), "accord so exactly with the general experience of modern surgery that they may be profitably borne in mind": When the patient is cold and collapsed, it would be well, he holds, to abstain from operating. If, however, it be evident that the shock is due to hæmorrhage, the surgeon should intervene, notwithstanding the serious general condition. If it be probable that the patient will die on the table, the operation should not be performed. In difficult and doubtful cases the surgeon should be guided by his experience, and trust to the dictates of his own conscience. Expectant treatment, it is held, is absolutely binding when, with a wound twenty-four or forty-eight hours old, the patient remains free from disturbance, the facial expression being as usual, the temperature and pulse normal, and the abdomen free from pain and tenderness. In such a case it may be assumed either that the intestine has not been involved, or that the wound has been rapidly closed by adhesions. Laparotomy in cases of abdominal wound is contraindicated when the medical attendant is inexperienced in such work, and in the absence of proper instruments and appliances, and of competent assistants. These conditions being favourable, and in the absence of decided contraindications, laparotomy should be performed in every case of recent penetrating wound of the abdomen, even if this wound be but a punctured one. Chaput, in such cases, would open the abdominal cavity in the middle line, and not attempt to follow the course of the penetrating wound. He would advise laparotomy also in cases in which there may be a doubt as to whether the wound is a penetrating one or not, and in cases of violent contusion of the abdomen caused by an agent having a narrow surface—as, for instance, a horse-shoe—provided in such cases there be any general disturbance. In cases of abdominal wound which has existed for longer than twenty-

four hours, it would be necessary to operate should clear indications of peritonitis be presented.

I related a case of traumatic intra-peritoneal hæmorrhage without external wound before the Clinical Society,[2] in which the patient was so low that exploration would probably have led to death, but in which, incision and drainage, after washing out with hot saline solution, brought about recovery.

The case illustrates very forcibly the hæmostatic effect of washing out with hot solution combined with drainage, and demonstrates the fact that in some cases of intra-peritoneal hæmorrhage, where the patient is too ill to bear a prolonged operation, this simple method may still save life by first emptying and then keeping the peritoneal cavity emptied, thus allowing coagulation to take place in the opened vessels.

As we have remarked in a former "Annual," simple concussion of the abdomen may produce all the symptoms of visceral injury, and in some cases an exploratory laparotomy is the only method available for clearing up the doubt.

Kirmisson[3] calls attention to the difficulty in the diagnosis of intra-peritoneal lesions incident to abdominal contusions. He states that the alteration in the quantity and quality of urine passed is sometimes of distinct value, but cites one case of Lefort's in which there was absolute anuria. Autopsy showed rupture of the intestine, but no injury of the bladder. Kirmisson holds that intervention should depend upon the gravity of the symptoms.

Reynier states that, in spite of unending debates upon this question, no conclusion has yet been reached which can guide the surgeon in deciding for or against operation. In most of Michaux's cases, where laparotomy was performed, it was evident that recovery would have ensued without this procedure.

Mr. Bryant[4] has written on the subject of abdominal injuries at considerable length, and has related the histories of a number of cases. The paper is of such importance that it ought to be read by all surgeons.

REFERENCES.—[1] "Bull. et Mem. de la Soc. de Chir.," Feb., 1895; [2] "Lancet," Jan. 19, 1895; [3] "La France Médicale," No. 14, 1895; [4] "Brit. Med. Journ.," Nov., 1895.

ABDOMINAL SURGERY. *A. W. Mayo Robson, F.R.C.S.*

Although it is found convenient to give the progress in abdominal surgery under the various headings, "Abdominal Injuries"; "Appendicitis"; "Gall Bladder"; "Hernia"; "Intestinal Obstruction"; "Intestinal Surgery; "Liver"; "Mesentery"; "Omentum"; "Ovari-

otomy"; "Pancreas"; "Peritonitis"; "Spleen"; "Stomach"; and "Ureter"; *quod vide*; there are certain general questions which may be conveniently considered together.

Bacteriology in Abdominal Surgery.—Dr. Penrose[1] shows how a bacteriological examination of the pus, in cases of abscess in the pelvis, will demonstrate the need of drainage in some cases, and not in others. He illustrates his paper by four cases:—

(1,) Tubo-ovarian abscess: pus sterile; no drainage after operation; recovery.

(2,) Tubo-ovarian and broad ligament abscess: pus contained streptococci; drainage; slow recovery with fæcal fistula, the result of intestinal necrosis.

(3,) Tubo-ovarian abscess: sterile pus; no drainage; recovery.

(4,) Double pyosalpinx: few streptococci in pus; drainage; rapid recovery.

Our own rule in these cases has been to drain in all cases where pus is present at the time of operation, though where the pus is free from odour the tube has only been allowed to remain in for twenty-four or forty-eight hours, as usually there has been very little fluid to remove subsequent to operation.

Moreover, as Dr. Penrose remarks, it seems that the method of bacteriological examination as at present employed indicates drainage, not in a minimum number of cases, but in a maximum number. There are probably a good many cases of pelvic abscess where the micro-organisms are of such character or number that drainage is not necessary. This is true when the pus contains only gonococci. Further work in bacteriology in conjunction with surgery will teach us much about this subject, and I think that we shall find that the number of cases requiring drainage in cœliotomy for suppurative pelvic disease will be diminished still further than has been done by the test which I have adopted.

Drainage of Douglas's Cul-de-Sac.—Boisleux[2] raises the question why drainage is no longer used. The use of antiseptics has fulfilled the prophecy of gynæcologists, that drainage would no longer be necessary. To this extent—where simple operations without complications, as sterile cysts, extra-uterine pregnancies, etc.—it is not so necessary. But the author thinks drainage is necessary in cases of purulent ovaritis, salpingitis, or pelvic abscess in any situation—*i.e.*, wherever there are germs—and that drainage must not be discarded for the less certain method of Spencer-Wells, in which the purulent collection in Douglas's pouch is emptied by puncture.

However, at the last Gynæcological Congress at Breslau, most of

the operators were against drainage, Frommel, Schauta, Sänger, and a few others being in favour of it.

Schauta decides during the operation whether he drains or not, depending upon the microscopic discovery of pus in the adnexa. If bacteria are present, use drainage. If bacteria are not present, close without the tubes. But the objection to this is the difficulty of deciding the presence or absence of pus microbes. Often the operator has no microscope. Again, in the pus it is not always possible to determine the presence of bacteria, while you cannot wait for cultures from the abscess wall to develop and determine the existence or non-existence of septic germs. Consequently each case must be treated as though sepsis was present.

How long shall drainage be pursued? The results of Morax and Hartmann show that in salpingitis containing sterile pus, or containing only gonococci, the tubes or drainage should be taken out thirty-six to forty-eight hours after the operation. In salpingitis containing streptococci or any other form of pyogenic microbe, the drain must be left much longer.

To prevent stopping of the tubes by blood-clots or other means, a piece of iodoform gauze is drawn through the tube and removed at the first dressing, insuring continuous drainage. Ordinary capillary drainage, as suggested by Mikulicz, is dangerous, Boisleuz having tried it in fifteen cases with only one good result. The double drain proposed by Péan, fixed by suturing to the uterus, is very efficient, but often occupies too much time.

In hysterectomies, with or without pelvic abscesses, the through-and-through drainage of Chopert will be found of great value, the tube passing from the abdominal opening out through the vagina, and admitting of irrigation with antiseptics.

In sixty cases treated by the self-retaining drainage-tube, for all manner of purulent pelvic affections, all were quickly and satisfactorily healed, most of them leaving the bed on or before the tenth day.

The technique of the application of the "cross" drainage-tube and the after-treatment may be thus summarised :—

The tube is placed in iodoform ether; then a strip of gauze about one-fourth its calibre is drawn through it and held in place by silkworm or cat-gut. A T-bandage soaked in a 2½ per cent. solution of carbolic acid is placed over the vulva.

The *first day* after the operation the strip of gauze is removed from the inside of the tube.

Second Day.—Vaginal toilet and T-bandage renewed.

Third Day.—Vaginal toilet; intraperitoneal injection of ·5 per cent. carbolic solution, and iodoform packing of the vagina.

On the following eight days the vaginal packing is prepared by dipping the carbolized gauze in

Olive Oil	fʒiij	Menthol	gr. lxxv
Creasote	gr. xxxvij		

and packing the same back against the wound through the vagina.

In all these manipulations the vagina is previously anointed with borated vaseline (5 per cent.) to lessen the irritation.

The method of drainage should continue four to five days, one day longer when there is pus.

Parietal Incision.—Mr. Greig Smith[3], in an interesting article on parietal incision in abdominal surgery, insists upon the importance of saving the muscular substance intact as much as possible.

"Hernia takes place through fascial tissues, not muscular. Any transverse division of muscular fibre leaves a permanent and irremediable weakness at the seat of division. However closely and accurately the divided fibres are joined, the cicatrix will stretch."

He lays down the following rules for guidance in incising the abdominal wall:—

(1,) The line of parietal incision should be made parallel with the direction of the most important muscular fibres.

(2,) Separate where possible, and do not divide aponeurotic fibres; when division is necessary let it be in a direction which will permit of the leaving intact one or other of the muscular layers behind the division, or in front of, or parallel to it. If no one of these practices is possible, then a flap entrance should be made.

(3,) Keep away from the bony margins, and avoid the thickest and least mobile parts of the parietes.

(4,) Let the incision be as short as is consistent with efficiency. A long incision with separation of muscular and aponeurotic fibres is better than a short one with division of fibres.

The following diagrams (*Figs.* 2, 3) represent the incisions for various operations on the abdomen, which the author, for the above reasons, or for convenience in operating, advocates:—

No. 1.—Incision for gastrotomy, gastrorrhaphy, hepatotomy, etc., (left lobe).

No. 2.—Pylorectomy: special cases.

No. 3.—Cholecystotomy. the dotted line an addition for deep operations on the ducts.

No. 4.—Langenbuch's incision for nephrectomy, colectomy, etc.

No. 5.—Incision for operations on cæcum and appendix vermiformis.

No. 6.—Incision for evacuation of collections in the broad ligament.

No. 7.—Ovariotomy and operations on uterus and appendages.

No. 8.—For operations on bladder and symphysis.

No. 9.—Another incision to expose collections between layers of pelvic peritoneum.

No. 10.—Colostomy, colectomy, etc.

No. 11.—Short Langenbuch's incision: kidney, spleen, tail of pancreas, etc.

No. 12.—Gastrostomy.

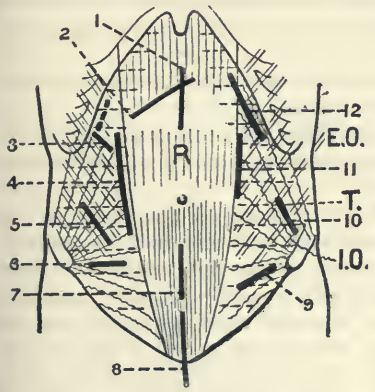

Fig. 2.—Diagram to show the relations of the chief to direction of muscular fibres in anterior abdomen. *E. O.*—External oblique muscle(═══); *I. O.* — Internal oblique muscle (~~~~~); *T.*—Transversalis muscle (— — —).

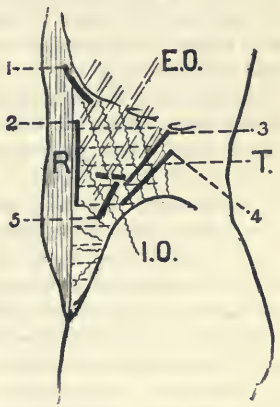

Fig. 3.—Diagram showing position of incisions and their relation to muscular fibres on the left lateral abdominal wall. *E. O.*—Ext. oblique muscle; *I. O.*—Int. oblique muscle; *T.*—Transversalis. No. 1.—Incisions for gastrostomy; No. 2.—Langenbuch's incision through linea semilunaris; No. 3.—For nephropexy; nephrotomy, etc.; No. 4.—For left lumbocolostomy; No. 5.—For laparocolostomy.

Appositions in Surgery.—Is the apposition of peritoneum to peritoneum a surgical error? forms the subject of a paper by Mr. Greig Smith,[4] who concludes as follows: "The practical application of these principles is as wide as abdominal surgery, and includes not only results to be encouraged, but results to be avoided. Where it is desired to secure quick, strong and permanent union, sero-fibrous apposition is better than sero-serous. Where the union sought need not be strong, and is desired to be only temporary, sero-serous apposition may be adopted. Fibro-fibrous apposition, while perhaps as good as sero-serous, is not in my experience so good as sero-fibrous. Sinister results, which we seek to avoid, arise when we leave raw surfaces to which intestines may adhere and cause obstruction. To cover such a surface by peritoneum would, according to published statistics, save nearly 2 per cent. of the deaths after abdominal operation."

In these conclusions, all surgeons of experience will agree, and, although the views expressed so admirably in the paper are not new, they cannot be too strongly insisted on.

On the use of Steam in Removing Tumours from Parenchymatous Organs.—Snegrojeff[5] states that a jet of steam, superheated to 150° to 200°C., and directed on to the organ to be incised, makes the part thus treated white and dry, so that a bloodless incision may be made into it. (See "Spleen.")

Injections after Laparotomy.—Mr. John Campbell[6] claims injections of glycerine, after abdominal section, to be more reliable and beneficial than turpentine, and quotes a case where turpentine failed and glycerine proved useful.

He claims the following advantages for glycerine over turpentine:—

(1,) It stimulates the bowel more powerfully.

(2,) The injection does not inconvenience the patient so much.

(3,) Repeated injections can be continued for a longer period without setting up irritation about the anus.

Retro-peritoneal Sarcoma.—Mr. C. B. Lockwood,[7] in a paper on the "Diagnosis of Retro-peritoneal Sarcoma," discusses the difficulty of diagnosis. In two cases he quotes, neither was diagnosed before the operation. In both cases, the only symptoms at the beginning were breathlessness and a feeling of weight in the hypogastrium. In the early stages, Mr. Lockwood remarks, diagnosis would not be difficult, especially if the abdomen were examined, the patient being under the influence of an anæsthetic. But the onset of this condition is so insidious that the patient is not seen during the early stages.

Operations in Peritoneal Adhesions.—We have, in former editions of the "Medical Annual," as well as in papers before Societies and in the Journals, insisted on the importance of peritoneal adhesions as a cause of pain, and of disability and danger, and have shown how the removal of adhesions around the gall bladder or pylorus, as well as in other situations, have led to the cure of long standing ailments.

Nicaise[8] states that the use of antiseptic methods, and the consequent development of antiseptic surgery, have made surgeons better acquainted with peritoneal adhesions, and have led to their successful treatment by operation. These adhesions may give trouble by disturbing the functions of implicated organs and by exciting pain. The painful sensations vary in character and intensity in different cases. They may be caused by displacement of the organs to which the adhesive bands are attached, or by constriction of the intestinal canal. The pains in the latter condition are often very severe, and of a similar nature to those of hepatic and renal colic. The diagnosis

of peritoneal adhesions is often very difficult; in some cases their existence can be assumed only by a process of exclusion, whilst in others, certainty as to their presence or absence cannot be attained except by an exploratory laparotomy. The author is of opinion, however, that a diagnosis may be made in many cases by close inquiry concerning such details as the previous occurrence of abdominal inflammation, the seat of the pain, and the relation of such seat to that of old inflammatory attacks; the time when the pain comes on with regard to the taking of food, and, in females, to the periods of menstruation. As many peritoneal adhesions become longer and thinner, and have a tendency to disappear, there should be no hurry in having recourse to operative treatment. When, however, they cause very severe and frequently renewed pain, although the compression of an abdominal belt or bandage or massage may give relief, the only method of dealing effectually with such trouble is the performance of laparotomy and the destruction of the adhesions. The cure that may be thus effected will be complete and permanent; but, it is pointed out, as laparotomy is a serious operation, unless practised under very strict antiseptic conditions, it ought not to be applied in cases of peritoneal adhesions unless these cause intolerable pain.

REFERENCES.—[1] "Therap. Gaz.," March 15, 1895; [2] Ibid., "Cen. tralblatt für Gynäkologie," Dec. 15, 1894; "[3] Annals of Surg.," March, 1895; [4] "Brit. Med. Journ.," Jan. 5, 1895; [5] "Berlin. Klin. Woch.," April, 1895; [6] "Brit. Med. Journ.," March, 16, 1895; [7] "Lancet," May 25, 1895; [8] "Rev. de Chir.," Aug., 1894.

ABORTION. (See also "Labour.")

Theophilus Parvin, M.D., Philadelphia.

Warmann highly recommends **Asafœtida** in the treatment of what he terms *abortio habitualis.*

To this class of patients the drug is given preferably in pill, commencing with 2 a day and increasing to 10, subsequently reducing. He claims that in all cases the results were satisfactory.

For threatened abortion, Viscaro[1] has successfully employed phlebotomy, as recommended by ancient writers. He selects for the operation one of the veins of the hand, drawing one or two ounces of blood. He cites a number of cases in which he has obtained the cessation of symptoms of abortion, the pregnancy going to term.

Riviére[2] states that there are only two remedies especially indicated, **Opium,** and **Rest in Bed.** Absolute repose is directed; then a large injection to empty the bowels, followed by an enema, containing 20 drops of laudanum, with 2 tablespoonfuls of water. This enema is given by a small glass syringe provided with a fine rubber tube,

which can be passed high up in the intestine above the sphincters. Almost always uterine action is either arrested, or greatly lessened. Then an hour after (two hours at most) repeat the laudanum, if required, one or two hours after a third enema; these may be continued until 100, 120, or even 150 drops are used, carefully observing the susceptibility of the patient.

In case the abortion cannot be averted, the treatment is very simple, if there are no complications. Do nothing, and let it go on, only use occasional vaginal injections of a corrosive sublimate solution, and when all seems ended, be certain that everything has come, a very easy thing if the ovum is expelled unruptured, much more difficult when the abortion occurs at twice. In every case, if there are no complications, do not hasten, let there be no untimely exploration, simply expectation, rest, and antisepsis.

If complications occur, such as hæmorrhage or septicæmia, the treatment must be active. First, as to hæmorrhage. This rarely occurs if the ovum is unruptured, and is in the uterus; nevertheless, it may. The treatment is the tampon. Let this tampon be of aseptic cotton, firmly packing the vagina, using neither pomade nor speculum. Most frequently the tampon excites uterine contractions, effecting complete detachment of the ovum, and when the former is removed the latter follows, and the abortion is completed. Should the hæmorrhage occur when the ovum is ruptured, the fœtus escaped, there remaining in the uterus the whole or part of the membranes, etc., the treatment is completely emptying the uterus, and this is done by curettage, digital at first, often sufficient, but if not, by an instrument; if bleeding continues, *débris* remain, and again instrumental curetting; if the practitioner hesitates to employ the curette, at least he can tampon.

In cases of septicæmia it is sufficient, if the disease is known at the beginning, to use antiseptic vaginal injections, morning and evening, and employ powdered iodoform upon the vulva, and the occlusive dressing with aseptic cotton, secured by a T-bandage. If, notwithstanding careful antisepsis and large doses of quinine, fever persists and chills recur, the curette must be again employed.

We desire to add to the treatment advised by Riviére, the injection of Churchill's **Tincture of Iodine** in all cases after curetting, whether digital or instrumental.

REFERENCES.—[1]"Lyon Medical"; [2]"Gaz. Hebdom."

Synopsis.—(Vol. 1895, p. 82.) In non-preventable cases MacEvitt advises: (1,) **Curettement and Primary Dilatation if required**; (2,) **Vaginal Tampon and Oxytocics**; or (3,) Oxytocics, applying external pad and bandage, and using **Ergot** internally. Kite-tail tampon in early stages as hæmostatic and uterine excitant. **Morphine** relieves pain and facilitates

dilatation. Digital dilatation of os if membranes can be felt but do not present. **Carbolic Acid Solution, 5%, or Biniodide of Mercury, 1 to 1000, for uterine irrigation.** Vaginal douches of the above, together with application of kite-tail bandage, and ergot in 20-minim doses, if membranes are retained beyond reach of finger, and unless fœtid discharge together with high pulse and temperature demand curettement. Effects of severe hæmorrhage following abortion have been benefited by **Saline Injections into rectum.**

ACNE VULGARIS.

P. G. Unna, M.D., Hamburg.
Norman Walker, M.D., Edinburgh.

There is not much that is new in the treatment of acne. Holsten of Brooklyn[1] puts the points fairly well. The first is the removal of the comedones. This is followed by friction with **Marble Dust** or **Pumice-stone** (that much advertised soap, which won't wash clothes, is very useful in acne). Holsten has most faith in **Sulphur.** He advises that the lather remain on for several minutes, and then be washed off. He thinks **Arsenic** at a late period of the disease is of service, but he has no faith in ergot.

Dr. Winfield, in discussing Holsten's remarks, claimed that in cases where there was any irregularity of menstruation, **Ergot** was very useful, given just before the periods.

Pospelow[2] recommends **Massage,** and gives full directions for the method of its application. The massage should continue for fifteen or twenty minutes, and the fingers should be well warmed.

Franke,[3] who adopts Unna's theory of a specific bacillus of acne, is very much against massage, and directs all his attention to preventing the infection of fresh areas of skin.

Schütz[4] connects acne with puberty, and usually with some complicating disease. The most important point in his paper is a warning against the use of glycerine soap or glycerine. After washing with **Soap,** which he recommends, he says the face should be washed with a weak solution of **Acid (Acetic).**

Philippson,[5] considering the cause to be uncertain, treats the symptoms. He opens the pustules and covers them with a 50 per cent. **Salicylic Plaster.**

Lassar recommends :—

℞ Naphthol	10 parts	Sulphur Præcipitatis	50 parts
Vaseline			
Saponis Viridis, āā	20 parts		

M. et fiat pasta.

℞ Camphor Trit.		Pulv. Cretæ Albæ	5 parts
Vaseline, āā	10 parts	Saponis Viridis	15 parts
		Sulphur Præcip.	50 parts

M. et fiat pasta.

℞ Resorcin		Vaseline	15 parts
Amyli Puri, āā	5 parts	Zinc Oxidi	5 parts

M. et fiat pasta.

And the following wash :—

℞ Acid. Acet. Conc.		Spirit q.s. ad	100 parts
Tinct, Benzoin			
Spirit. Camphor., āā	6 parts		

M. Sig.—Apply with sponge night and morning.

Purdon recommends **Oil of Amber** as being more cleanly and pleasant than ointment. It should be rubbed in at night, and washed off next morning with hot water and soap.

Allan Jamieson recommends, in order to abort acne, a mixture of 1 part of **Ichthyol** and 3 parts of **Water.** Walter Smith, the application of **Pure Carbolic** covered by **Flexile Collodion.** As will be seen, there is little advance. **Soap** and **Sulphur** remain the sheet anchors of the treatment of acne. The removal of the comedones is not merely cosmetic but distinctly of value in cutting short the course of the disease. But their removal should be done skilfully, for if too much force is applied, the remedy is worse than the disease. One of the best remedies for acne is **Eichhoff's Sulphur Camphor Peru-balsam Soap,** which may be used either as any ordinary soap in mild cases, or well rubbed into the part in more severe ones. But in using the soap treatment one must not go too far, and it is well that the patient should have one day's rest out of the seven.

In the emphasis which is laid in all modern works on the local treatment, there is of course no endeavour to prevent girls who suffer from chlorosis or indigestion from having the benefit of treatment suitable to these conditions.

REFERENCES.—[1] "Med. News"; [2] "Dermatol. Zeit.," vol. ii., heft 3, 1895; [3] "Med. Neuigk.," No. 5; [4] "Archiv. fur Dermatol.," vol. xxx., heft 2., 1895; [5] "Therap. Monat."

Synopsis.—(Vol. 1895, p. 85.) Mackenzie advocates as preventive treatment: (1,) Removal of superfluous seborrhœic secretion; (2,) Stimulation of sebaceous glands; (3,) Asepsis of skin. For the above purposes Eichhoff's **Medicated Soaps** are good, *e.g.*, the alkaline camphor-sulphur—Peruvian balsam, the creolin and the alkaline brimstone, the alkaline sulphur and the creolin powdered, the neutral salicylic sulphur and the salicylic resorcin, sulphur powdered soaps. Before applying these, the face is steamed or bathed, and hot water is used in making the lather. They may be used simply for washing, or rubbed well in, and afterwards washed off, or allowed to remain on with or without a water-tight dressing, according to activity of treatment required. Brisk towelling is useful. For the developed disease: (1,) Remove occluding plugs; (2,) Subdue inflammation; (3,) Remove accessory conditions. Comedones are expressed with assistance of steaming and bathing. Milder **Super-fatted Soaps,**

e.g., menthol or menthol eucalyptol, soothe inflammation. Pustules or indurations are punctured, or touched with **Liquid Carbolic Acid** and covered with **Collodion.** Any inflammation between the lesions is subdued by **Soothing Ointments** (*e.g.*, ung. zinci benz.; ung. glyc. plumbi subacet.; ung. ac. borici; carbonate of zinc in cold cream) at night, and **Calamine Lotion** by day. In non-inflammatory cases stimulants at night may be used, *e.g.*, **Sulphur** or **Belladonna** (ext. Belladonna ʒij, lanovaseline or ung. zinci ox. *q.s.* ft. ung., or the simple **Belladonna Extract** may be used if the eyes are protected); by day a **Calamine or Creolin** or **Sulphur** (sulphur in eau de Cologne) **Lotion.** The preventive treatment should follow the curative. Constitutional treatment is not necessary according to Mackenzie, but Payne and Crocker hold the opposite view. Abraham uses **Ichthyol Soap** chiefly, and Stopford Taylor advises **Liniment. Sap.**, P. B , because so many other drugs can be incorporated with it. Unna finds **Resorcin Sublimate Paste** useful. Stopford Taylor considers the **Weak Ammoniated Mercury** unequalled as a disinfectant for open pustules. Payne removed indurated lesions, of thirteen years' standing, by a current of 3 milliamperes strength from a dry Leclanché battery, inserting the negative needle into the centre from a them. Allan Jamieson opens the abscesses of obstinate indurated acne, and applies **Unna's Salicylic and Creasote Plaster.**

ACTINOMYCOSIS. *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

Dr. J. J. Pringle[1] reports a case of actinomycosis of the skin of the back, which for some time improved greatly under **Iodide of Potassium. Thyroid Tablets** were also used with some benefit. In the discussion, Dr. Stephen Mackenzie recalled a case very similar clinically, in which he was unable to find any fungus.

Stoube[2] applied a plaster of **Chrysarobin, Resorcin** and **Ichthyol.** After ten weeks the patient was very much improved, and ultimately recovered. In another case, a girl of eighteen, in whom the affection had lasted four or five years, the same plaster was applied, plus the administration of **Iodide of Potassium,** and the result was the same. From this he concludes that the iodide is of little value. Unfortunately actinomycosis is rarely restricted to those regions which are within the reach of plasters, and the general consensus of opinion appears to be, that iodide is of very considerable value.

Rydygier[3], in two cases, used with much benefit the local injection of a 1 per cent. solution of potass. iodid. The injections were made every one or two weeks.

REFERENCES.—[1] "Trans. Med. Chir. Soc."; [2] "Therap. Monats.," Oct, 1894; [3] "Weiner. klin. Woch.," Dec. 9, 1895.

Synopsis.—(Vol. 1895, p. 88.) Cutaneous and subcutaneous tumours are cross-cut, then treated with **Tincture of Iodine; Potassium Iodide** is given internally.

ALBUMINURIA.

Synopsis.—(Vol. 1895, p. 30.) Robin employs the **Glycero-Phosphates** of Calcium, Sodium, and Potassium alone or combined, and by mouth or subcutaneous injection, and considers that clinically they are indicated in albuminuria.

ALCOHOLISM.

Synopsis.—(Vol. 1895, p. 97.) Clark treats alcoholic gastritis with **Hot Wiesbaden Kochbrunnen Water.** Bellamy uses a primary **Calomel Purge** and 20 grains of **Trional** in water, with 10 minims of **Capsicum Tincture**, and a **Hot Bath** if patient's condition warrants it; 10 grains more of trional may be given in thirty minutes if required, and 20 more in an hour if necessary. For weak heart **Digitalis** is indicated, and in convalescence **Vegetable Bitters** with **Valerian** and **Strychnine**. **Forced Feeding** by small frequently repeated quantities is also used. **Strychnine Nitrate** is frequently useful. Twitchell suggests use of **Hot-air Baths** for typhoid stage, and **Capsicum** to soothe stomach; he speaks of **Chloral Hydrate** in 30, 45 or 60-grain doses every half-hour until sleep is induced; **Strychnine** also in typhoid stage. Shackles should not be used in the latter stages. Cheever recommends **Camphor, Coca** or **Asafœtida** in early stages, the latter in 10, 20 or 30 grains; **Counter-irritation** over pit of stomach often gives great relief.

ALOPECIA. *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

The name alopecia is somewhat loosely used, and to some is almost synonymous with alopecia areata.

Alger, quoted in "Therapeutic Gazette," has a number of useful remarks on the condition of baldness. As, however, the treatment of the condition depends largely on its cause, it is a little difficult to give a clear and useful *résumé* of his paper. When the alopecia is due, as it is in the vast majority of cases, to seborrhœa, that is the condition to be treated. Where stimulation is required he recommends **Tincture of Cantharides, Nux Vomica, Capsicum** or **Quinine,** made up with some oily mixture if the scalp be very dry, with alcohol if it be greasy. He has found benefit from Lassar's prescription of 15 grains of **Pilocarpine** to an ounce of ointment.

There is no doubt that there are cases of alopecia which are due to general conditions, and require general treatment, and in such cases it should of course be adopted; but, as already remarked, the enormous majority of cases are due to seborrhœa, and the notes on the treatment of that form will be found under the head of Pityriasis Capitis.

ALOPECIA AREATA. *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

The opinion is evidently gaining ground, that there are varieties of alopecia areata, some of which may be parasitic. But in coming to such a conclusion one must be very careful in excluding what is known

as "bald" ringworm, for there are cases of tinea tonsurans where the scalp may be almost absolutely bald, and the finding of fungus in some of the marginal hairs more a matter of luck than of good guidance. Unfortunately, the results of treatment do little to clear up the difficulty. Whether the disease be parasitic or no, stimulation is the remedy to be applied. Some recommend one stimulant, others another, and the conclusion one comes to is that the great remedy is time.

Sabouraud[1] lays stress on the fact that it is a disease of the skin and not of the hair. He believes in **Blistering,** removes the cover of the blister, and paints with a **Nitrate of Silver Solution,** 1 to 15. He has treated about a hundred cases, and thinks that the results are more rapid than with any other method.

Stoker recommends treatment with **Oxygen Gas,** under a rubber apparatus.

Beevor[2] used **Thyroid Tabloids** three times a day, under which there was some improvement. Dr. Hector Mackenzie reports absolute failure with the same treatment.

Dr. Gautier recommends **Metallic Electrolysis,** and claims to have cured a case in two sittings without any other treatment. He places the copper needles in a circle, one centimètre apart and half a centimètre from the healthy edge. At the next sitting a second circle is made internal to the first. The application is followed by a considerable amount of irritation.

There are few of us who could not point to a very brilliant result with one or other of the methods suggested, and probably electrolysis is no more valuable than any of the other methods.

REFERENCES.—[1] "French Dermatol. Soc."; [2] "Brit. Med. Journ.," July, 1895.

Synopsis.—(Vol. 1895, p. 100.) Leistikow rubs the parts every evening with a stick of Chrysarobin 30, Colophonium 5, Cera Flava 35, and Olive Oil 30 parts; and washes this off with Olive Oil in the morning, applying Zinc Ointment to calm undue irritation.

ALOPECIA PREMATURA.

Synopsis.—(Vol. 1895, p. 100.) Allan Jamieson advises Kneading Scalp backwards and forwards daily as adjuvant to other measures for alopecia prematura.

AMENORRHŒA.

Theophilus Parvin, M.D., Philadelphia.

Bouchut[1] recommends the following for amenorrhœa :—

℞ Absinth* Armoise, incised (Mugwort), āā grs. xx	Aquæ bul. Oij

*Absinth equals Artemisia Absinthium, or Wormwood; Armoise equals Artemisia Vulgaris, or Mugwort.

Allow the steam to pass over the genitals, and take 2 drops of **Sulphuret of Carbon** in sweetened gruel water.

Lawrence quotes a case of amenorrhœa, in which pigmentation occurred. The pigmentation was so great as to suggest Addison's disease. The treatment was **Wine of Iron,** ℥j. and **Fowler's Solution** twice daily, Burgundy, suitable diet, including milk, and regulation of life upon general hygienic principles. The cure was complete after many months of treatment.

The fluid extract of **Senecio** not only makes the appearance of the menses regular, but also increases the flow.

If, however, there is anæmia, the drug is worthless. Murrell, who has given it careful study, finds its action analogous to the permanganate of potassium. It is best prescribed as follows :—

℞ Ext. Fluid Senecio Jacobæa f℥j

Sig.—20 drops four times a day in water.

Bloom, after a year of experimentation with **Oxalic Acid,** finds for the amenorrhœa of chlorotic cases that our results are better if we combine the oxalic acid with some of the ferruginous salts.

The formula used is :—

℞ Ferri Peptonat.	grs. xiij	Acid Oxalic (C.P.)	grs. ij
Mangani Peptonat.	grs. ij	Alcoholis	f℥iij
		Aquæ, q.s. ad	f℥iv

M. Sig.—℥ij, t.i.d.

Xenomenia.—Füth reports a case of hæmatemesis occurring at the menstrual period which pointed strongly to vicarious menstruation, but the autopsy revealed an ulcer on the anterior surface of the stomach, about an inch from the cardiac orifice.

The rule is, that if we do find a hæmorrhage, and at the menstrual period, we should not be satisfied with merely calling it a vicarious menstruation, but try to ascertain the condition of the organ whence the blood flows.

REFERENCE.—1 "Therap. Gaz.," June 15, 1895.

The Psychological Results of Amenorrhœa.

Fancourt Barnes, M.D., F.R.S. Edin.

Normal menstruation may be described as the monthly discharge of a moderate quantity of sanguineous fluid without pain in physiological response to the periodical ovarian nisus associated with the maturation and escape of an ovum or ova. The fluid consists mainly of blood ; it contains also more or less mucus ; and epithelial scales cast from the decidua menstrualis. One characteristic of the blood is that it does not coagulate. The menstrual nisus may be regarded as

analogous to gestation. It is clear that such a process cannot be inhibited without distress and danger in various directions. I only wish to draw attention to what may occur in the mental condition under the strain of amenorrhœa. The case I am going to relate is a striking one, and exemplifies the serious danger of disturbed menstruation.

Miss S., aged twenty-seven, consulted me in May last. The catamenia had first appeared at the age of sixteen, and had gone on naturally and regularly until a year ago, when they ceased on the shock of her father's death, together with the depression resulting from two successive attacks of influenza. From the time that the menstrual functions ceased, she gradually became more and more weak-minded, until her condition was not much above that of an imbecile. Her everlasting ejaculation and plaint was: "Oh my head!" Her physical condition was also distressing. Her legs were swollen, and the abdomen was also distended by flatus. The eyes were distended and prominent as in exophthalmos. As she was virginal, I advised an examination of the uterus under chloroform, so that any surgical treatment might be adopted at the same time, if necessary. Under chloroform I divided the cervix and swabbed out the uterus with **Tincture of Iodine.** During the succeeding three weeks I applied tincture of iodine twice a week into the uterine cavity. At the end of one month from the day of the operation, the catamenia appeared. The menstruation was painless, and there was a free flow of blood.

From that day the patient's mental and physical symptoms began steadily to disappear. She came to me last October perfectly well in all respects. A case like the above is a striking example of the duty of the physician to give local treatment in cases where the menstrual functions are disturbed. This patient must have drifted into an asylum in course of time, had her friends not consented to the surgical treatment I have described. I need hardly say that when she consulted me she had undergone a long course of medical treatment. (See also "Nervous Disorders of Women.")

Synopsis.—(Vol. 1895, pp. 33 and 101.) Bloom administers **Oxalic Acid:** ℞ Oxalic Acid, gr. 8; Aquæ, Syr. Limonis, āā ʒij; M. *Sig.*—A teaspoonful four times a day. It must be cautiously used, and not until the diagnosis of pregnancy has been excluded. Panecki introduces the poles of a **Faradic Battery** into the uterus, the duration of the sitting varying from five to fifteen minutes for from five to thirty successive days. ℞ Hydrarg. Perchlor., gr. ¾; Sod. Arseniatis., gr. j; Ferr. Sulph. Exsicc., gr. 30; Pot. Carb., gr. 15; Ext. Nucis Vom., gr. 5; M. et div. in pil. 30. *Sig.*—1 to be taken before each meal; a useful general prescription. **Lappa Officinalis** has recently been commended for amenorrhœa.

AMPUTATION. *Priestley Leech, M.D., F.R.C.S.*

Under the title of "A Contribution to the Study of Modern Amputation," Estes [1] has written a particularly valuable paper founded on an enormous experience. It would require too much space to note all the special points in this paper, but the most important are well worthy of the attention of surgeons. In all he has performed three hundred and forty-three major amputations, only nineteen of which were necessitated by pathological conditions other than trauma. In compound dislocations of the joints, he holds that primary amputation should never be performed unless the principal vessels are torn, or the greater part of the skin killed by pressure. He has treated compound dislocations of all the large joints of the limbs, except the shoulder, conservatively with excellent results. He states that muscular lacerations should receive less attention than should the degree of injury to the skin. If all the muscles at a given level are pulpified, amputation is of course necessary. He always attempts to save the limb when not more than two inches of the principal bone is comminuted. Great contusion and laceration of muscles, without fracture of a bone and little injury to the skin, rarely require amputation. The important point here is to relieve the immense tension of the skin, on account of the hypodermal effusion of blood and serum, by immediate multiple punctures of the skin in order to drain away the effused fluid. No drainage tubes should be used nor even a strip of gauze, as the least local pressure will usually cause necrosis of the already badly-nourished skin, and from this point infection is apt to occur.

Injury to the skin without serious injury to the deeper tissues never calls for amputation.

Whenever there is reason to doubt that an amputation is actually necessary in a given case, there is very little danger in postponing the operation, in the meantime keeping the extremity in an aseptic condition by thorough surgical cleanliness and perfect drainage.

As to the time of operation, Estes says that this should depend entirely upon the condition of the patient. The former classification into primary, intermediate, and secondary amputations, has lost much of its significance; in Estes's opinion a so-called intermediate amputation is no more dangerous than a primary amputation. He is convinced that the condition ordinarily observed by the surgeon a few hours after a major injury, usually called shock, is really a condition of acute anæmia. To operate while a patient is in this condition is a mistake, for death usually follows. If the hæmorrhage be thoroughly controlled by Esmarch's tourniquet, applied over the crushed tissues if practicable, and if not practicable, applied just above

them, and the comminuted tissues and the uninjured parts of the limb thoroughly cleaned and disinfected, and an antiseptic dressing applied over all, the amputation may be deferred for twenty-four or thirty-six hours or even longer, when by careful diet and stimulation the patient may recover some strength, and the blood-vessels have time to fill again. If the patient is in good condition operate at once.

As emphasizing the importance of immediate hæmorrhage in the mortality statistics of amputation, Estes states that during the first six years he was accustomed to operate before sufficient time was given to recuperate. He thought if some method of preventing excessive hæmorrhage in injuries could be devised and operation postponed for some hours, so that patients could recuperate somewhat, results after amputations should be better. By far the greater number of injured persons brought to his hospital are transported over the Lehigh Valley railroad. He had distributed along the railroad, at all the stations, on the wreck cars, and on all the principal passenger trains, cases containing some simple antiseptic dressing, and especially two Esmarch elastic tourniquets. Instructions were issued that first aid, especially the stoppage of hæmorrhage, should be accomplished by means of this apparatus. Results at once began to be better.

The apparatus has been in use and the deferred operation method has been employed during the last six years. The term of twelve years is thus divided into two periods of six years each. During the first six years there were one hundred and fourteen single major amputations and nine deaths, giving a mortality rate of 7·89 per cent. There were nine cases admitted in a hopeless condition. In the last period of six years, during which the *régime* has been in use, there were one hundred and eighty single major amputations and five deaths—2·77 per cent. mortality. There were only four hopeless cases admitted. The double synchronous operations exhibit the difference in a greater degree. In the first period thirteen double operations and six deaths—46·25 per cent. mortality. In the last period twenty-five double operations and three deaths—only 12 per cent. mortality. In the first period there were two triple synchronous operations, and both patients died. In the last period there were five triple synchronous operations and two deaths. The saving of blood should therefore be urged as the paramount necessity for recovery after major amputations, and in a line with this is the importance of allowing an exsanguinated patient time to recuperate before attempting to operate. The average number of days in hospital after amputation was 22·6.

Estes's own statistics show for the whole number of single major

amputations two hundred and ninety-four, with only nineteen done for disease, and including seven hip-joint amputations—a general mortality rate of 4·76. This is but a little higher than Schede's uncomplicated cases. Taking the last period of six years, when the cases were exactly of the same character as before, but when hæmorrhage was prevented and when operation was deferred until the condition of acute anæmia was somewhat relieved, there were during this period one hundred and eighty single major amputations and only five deaths, or 2·77 mortality; these figures include six hip-joint amputations. This is the lowest mortality-rate Estes has seen for a series of one hundred and eighty major amputations.

Le Moyne[2] has made successful use of the following modification of Pirogoff's well-known amputation. The flap is formed according to the directions given by Pirogoff, except that the calcaneum is sawn less obliquely. An excavation is then made on each side of the portion of calcaneum in the flap so that it fits accurately into the inter-malleolar space. As there was some tilting of the anterior border of the fragment he divided the tendo-Achillis. The stump was dressed with a long posterior splint well padded forward at its inferior extremity.

The following method of controlling hæmorrhage when amputating at the shoulder is recommended by Mr. Clement Lucas.[3] The deltoid flap having been raised and the head of the humerus disarticulated, the knife is carried down on the inner side of the bone somewhat below the neck. The left hand now grasps the inner flap between the thumb and fingers so as to compress the artery, the thumb being in contact with the raw surface and the fingers outside. Held in this way the inner flap is completed by the knife without hæmorrhage, the surgeon retaining his hold until the vessel is secured with forceps.

REFERENCES.—[1] "Medical Record," Nov. 3, 1894, quoted in "Therap. Gaz.," Feb. 15, 1895; [2] "Philadelphia Polyclinic," Aug. 4, 1894, quoted in "Therap. Gaz.," Nov. 15, 1894; [3] "Brit. Med. Journ.," Feb. 23, 1895, p. 417.

ANÆMIA AND CHLOROSIS.

Synopsis.—(Vol. 1895, p. 102.) Taylor emphasizes the necessity of enforcing **Rest** in many cases as well as the use of **Iron**. Forcheimer advocates **Arsenic** in treating anæmia of children, specially **Arsenite of Copper**. He also combines antiseptics with blood preparations in ordinary cases, giving 5 grains **Hydronaphthol** or **Salol** before meals, and the same amount of **Hæmogallol** directly after a meal, or large quantities of **Beef-juice** may be substituted for the latter, but the juice must contain blood. Next in utility is the combination of antiseptics administered before meals, and **Carbonate of Iron** after food. Antiseptics often succeed alone when iron fails. Stockman gives **Ferrous Sulphide** in keratin capsules. Dori

gets good results in chloro-anæmia by the hypodermic injection of **Ammonio-citrate of Iron**, using a daily dose of 5 centigrammes dissolved in 1 gramme of water, and selecting the interscapular region for the injection. The following is useful: ℞ Strych. Sulphat., gr. ½; Tr. Ferr. Chlor., ʒij; Vin. Ergotæ, ʒss; Syr. Simp., ʒjss; Aq. Dest. q.s. ad ʒvj; M. *Sig.*—A teaspoonful thrice daily.

ANÆMIA PERNICIOSA.

Synopsis.—(Vol. 1895, p. 104.) Stengel advises that **Arsenic** should not be pushed to irritation of gastro-intestinal tract, and the dose rarely need exceed 15 drops; at first confinement to bed is necessary, with use of bed-pan and urinal; diet should be nutritious and easily assimilable, meats being used sparingly, as hydrochloric is deficient, and sugars or starches also, from their tendency to ferment. **Hydrochloric Acid** is often useful for gastric fulness and flatulence. For severe vomiting **Bismuth Subnit**, gr. 5, with **Cocaine**, gr. $\frac{1}{30}$ to $\frac{1}{15}$, is best, and seem to assist action of arsenic; they are best given before meals. **Lavage** often controls obstinate vomiting. **Bitters** before meals assist gastric atony and deficient appetite. Intestinal lavage is doubtful, as also is use of purgatives except in parasitic cases. **Enemata** or **Suppositories** may be used. In later stages **Massage** assists the circulation, and hypodermic injections of water or blood may be required, *e.g.*, normal **Salt Solution**, 2 pints to 2 quarts, may be used. During convalescence **Iron** is a valuable adjunct to arsenic, but not in earlier stages.

ANCHYLOSTOMIASIS.

Synopsis.—(Vol. 1895, p. 113.) **Thymol** is specific, 4 grammes being adult dose, of which 2 are given at 8 a.m., and 2 at 10 a.m. For a day before and after its administration, the patient is kept on a diet of milk and soup. At 12 noon, *i e.*, two hours after giving the second dose, a purge of **Sulphate of Magnesium** or **Castor Oil** (preferably the latter) is given. For weak men 25 grammes of **Brandy** are added to each dose. Patients taking thymol to be kept lying down, as collapse is often experienced. It is contra-indicated by extreme debility, very low temperature, age beyond sixty years, and by advanced cardiac or other organic disease. Once a week is sufficiently often for the use of thymol. The evacuations should be disinfected by **Hydrarg. Perchlor.** **Sulphate of Iron**, 1½ grammes in water in 3 equal doses, is the best tonic.

ANEURISM OF ARTERIES OF THE EXTREMITIES.

Priestley Leech, M.D., F.R.C.S.

TREATMENT.—In most cases of aneurism of the limbs, one of the following three methods is selected: (1,) Proximal ligation at a point immediately above or some distance removed from the aneurism; (2,) Splitting and emptying the sac with peripheral and proximal ligation; (3,) Total extirpation of the aneurism.

The first two operations are well known, but since Hunter introduced his operation in 1785, the last method has fallen into oblivion, although it was described by Purmann two hundred years ago, and a successful case was done by an Italian named Guattani a hundred years ago.

Ransohoff[1] describes two cases treated by this method, both followed by recovery. He gives results of treatment by the various methods, and the mortality is less when extirpation is done.

Its advantages are: the presence of the sac after the Hunterian operation is a menace to the limb; soft clots may be washed into the neighbouring circulation, and recurrence may take place after months or years of apparent cure. All vessels which are likely to give rise to secondary hæmorrhage can be ligated. The danger from cicatricial contraction of the sac and consequent involvement of nerve trunks is averted. The wound being a clean one, is likely to heal by first intention.

The operation is a radical one; no recurrence can take place. All fear of the artery being unhealthy near the aneurism is largely assumption, for, according to researches of Bowlby and C. O. Weber, atheroma is not oftener found just above the aneurism than at a distance above it, and atheromatous vessels can be occluded by sterile ligatures without fear of secondary hæmorrhage. Total extirpation should be tried before amputation is resorted to. Proximal ligation should be reserved for cases of idiopathic or spontaneous aneurisms, in which the age of the patient or an enfeebled condition from other causes would make a prolonged operation hazardous, and for cases where the position of the tumour precludes the possibility of extirpation.

The disadvantages of total extirpation are: the difficulty of its execution, and the danger of wounding important parts to which the sac has formed adhesions. The danger of wounding the attendant vein has been over-rated. From Kubler's table the femoral vein was injured only in three cases, the popliteal in five, the axillary in one, and the brachial in three. In all but one of these cases the vein was ligated or resected, but gangrene did not ensue.

Littlewood[2] gives notes of two cases of aneurism—one femoral, the other popliteal—treated by extirpation. Both were cases of diffused aneurism and both were cured. The femoral aneurism occurred in a man aged forty, and the popliteal in a man aged sixty-three. The description of the operation in both cases will repay perusal by those intending to try this method of treatment, which in these days of antiseptic treatment appears to have a successful future before it, and in cases of diffused aneurism should certainly have the preference over amputation.

REFERENCES.—[1] "Ransohoff, "Annals of Surgery," Jan., 1894; [2] "Lancet," Nov. 17, 1894, p. 1143.

ANGINA PECTORIS.

Synopsis.—(Vol. 1895, pp. 49, 54 and 116.) **Sodium Nitrite**, 1 or 2 grs., maximum dose, 4 to 5 grs. **Valerianate of Amyl**, 5 or 6 capsules, containing 2½ grs. each, may be given per diem to diminish the dyspnœa. **Iodide of Potash**, 45 to 60 grains, daily for three or four years, suspending treatment for eight or ten days each month. In rheumatic cases **Sodium Salicylate**, **Rest**, **Even Temperature** and dietetic care are important. **Nitrite of Amyl** inhalations, **Nitro-glycerine** and **Morphia** hypodermically, lower blood pressure and relieve the heart. **Hot Applications** to chest, **Faradization** of cardiac region, diffusible stimulants internally; also **Belladonna** and small doses of **Opium** have been recommended.

ANGIO-NEUROSIS. (See also Special Article, p. 102.)

Synopsis.—(Vol. 1895, p. 125.) After treating any reflex irritation, **Arsenic** is useful for most angio-neurotic conditions, especially in such manifestations as asthma, acting as nerve tonic and internal antiseptic. **Strychnine** is also useful as nerve tonic, also for constipation and asthma; also in neurotic subjects with weak heart, it relieves the hard spasmodic cough of bronchitis complications. **Quinine** is generally useful. **Ergot** has been used for many angio-neuroses. **Calomel** is most reliable when any toxic conditions present, whether of internal or external origin.

ANTHRAX. *Priestley Leech, M.D., F.R.C.S.*

TREATMENT.—A. F. Matveiff reports twenty-nine cases of anthrax. Twenty-four were treated by Jarnovsky's method of subcutaneous injections around the pustule of a 2 to 3 per cent. **Carbolic Acid Solution**—3 Pravaz syringefuls three times daily—with compresses soaked in the same solution. Seventeen recovered, seven died but all these latter were not seen until symptoms of profound systemic poisoning had already developed. The remaining five of the twenty-nine were treated by excision of the pustule with subsequent cauterisation by Paquelin's instrument.

REFERENCE.— Epitome of the "Brit. Med. Journ.," Feb. 9, 1895.

Synopsis.—(Vol. 1895, p. 126.) Injection of **Carbolic Acid** 1% into the pustules and around (Maffucci's treatment). Sistini used 3% and 2% solutions, injecting 1 gramme at a time, giving 8, 3 and 2 injections on successive days respectively. He also applied **Corrosive Sublimate Dressings**, and gave large doses of **Phenate of Quinine** internally. Moore excised the entire pustule and dressed the wound with **Ipecacuanha** and **Water** and **Double Cyanide**, giving 5 grs. of **Ipecacuanha** and ⅛ gr. **Morphine** every four hours. Anderson makes a thorough application of pure liquid **Carbolic Acid** all over the pustule and just beyond its margin. Müller deprecates incision, and advises fixing the affected part and adjacent joint to prevent dissemination, elevating the limb to assist circulation. **Mercurial Ointment** is applied to prevent secondary infection, and **Alcohol** in large doses, with **Nutritious Diet**, is essential.

ANUS.

Synopsis.—(Vol. 1895, p. 128.) Hartmann destroys tuberculous ulcers with **Thermo-** or **Galvano-cautery**, if patient's condition allows. **Iodoform Ointment** often benefits after ulcer has been partially removed. Pain is

relieved by **Opium Suppositories**, application of **Chloral**, 1%, or of a mixture of **Bismuth Subnitrate** and **Iodoform**. In one case **Nitrate of Silver Solution**, ½%, applied regularly for sixteen months proved successful. In pruritus ani, Berger speaks well of the insertion of a piece of cotton wool soaked in **Liquor Calcis Chlorinatæ** into the anus for about an inch. The plug is removed when slight burning is felt, and the anal region is washed with the lotion and allowed to dry spontaneously. Balfour advises an ointment of **Calomel**, grs. 80, to **Vaseline**, ℥j, for pruritus ani.

APPENDICITIS. *A. W. Mayo Robson, F.R.C.S.*

As we devoted considerable space to this subject in last year's "Annual," and as nothing specially new has been brought forward since, we can only refer to a few of the many articles published during the past year.[1]

Medical and surgical authorities differ even yet in their opinions, though it will be found that physicians are becoming much more surgical in their views as to the treatment of this formidable and frequent disease.

No two papers could be much more at variance than the one by Dr. Murphy, in the "British Medical Journal," (February 16, 1895), and the one by Mr. Thornley Stoker, in the same Journal for June 1st, 1895.

Murphy holds that every case favourable or unfavourable should be treated by operation early. There are various conditions found in operating for above. When abdominal wall is infiltrated and abscess is opened, without opening the unaffected portion of peritoneum, there may be: (1,) Small circumscribed abscess with the appendix forming part of the wall: (2,) Small abscess with a track leading to a deeper seated and larger abscess; (3,) Large abscess filling iliac fossa, containing concretions, or a gangrenous appendix, closed in by adhesions; (4,) Multiple abscesses with no connecting sinuses (rare condition); or (5,) There may be an abscess in the opposite side of abdomen.

Mr. Thornley Stoker says: "There is nothing of which I have become more strongly convinced than that nearly all cases of acute typhlitis have their origin in a loaded colon, except the fact that if that colon can be unloaded in time, recovery will take place." His conclusions are: (1,) That in this as in some other acute peritoneal inflammations, operation is most unfavourable, should be seldom resorted to, and has been too freely adopted; (2,) That purgation, if it can be induced, is the best remedy at our disposal; and that the most likely and safest way to effect it is by hydrostatic washing with warm water and a soft tube.

The truth probably lies between the two, but an increasing experi-

ence leads me to the conclusion that an early operation in many cases which are treated medically would tend to the saving of a number of lives now sacrificed by delay. I have regretted waiting, but I never remember to have regretted operating, and in no class of cases is the rule, 'when in doubt, operate,' more applicable than in this.

Dr. Charles McBurney[2] calls attention to the advantages of using his method in opening the abdomen when operating for appendicitis. This is as follows: The primary incision made in the usual position involves only the skin and subcutaneous tissue; the aponeurosis of the external oblique is then split in the direction of its fibres, and separated widely by means of retractors.

The fibres of internal oblique and transversalis are then separated by some blunt instrument, and held apart by retractors when the peritoneum is opened in the usual way.

Cases operated on by this method subsequently present a scar of the skin alone which is movable on the parts beneath, and causes no weakness of the abdominal parietes.

Dr. L. A. Stimson[3] advocates the removal of the appendix at the primary operation in all cases of suppurative appendicitis, when it can be done without danger of disturbing protective adhesions.

Two interesting cases of relapse following simple evacuation are cited in support of the contention.

REFERENCES.—[1]Treves, Relapsing Typhlitis, "Brit. Med. Journ.," March 9, 1895, Treatment of Appendicitis, "Therap. Gaz.," Dec. 15, 1894, McBurney, "Internat. Journ. of Surg.," Sept., 1894; J. W. White, "Lancet," Feb. 16, 1895; [2]"Annals of Surgery," March, 1895; [3]Ibid., May, 1895.

Synopsis.—(Vol. 1895, p. 133.) Richardson believes the use of cathartics to be harmful in the early stages, considering **Opium** the best drug if any be used. Burney Yeo and Haigh point out that some cases of perityphlitis are rheumatic in origin, and yield to **Salicylates** and general **Anti-rheumatic Treatment**.

ASCITES (Tubercular). *R. Shingleton Smith, M.D., B.Sc., F.R.C.P.*

Löhlein[1] treated eighteen cases by abdominal section; six out of the eighteen remained permanently cured.

Insufflation of Air.—Three litres were injected by Folet[2] (Lille) after six litres of fluid had been removed. The general condition greatly improved, and was maintained.

The reason why 80 per cent. of patients recover from tuberculosis of the peritoneum after operation was discussed by D. Morris[3], who endeavoured to show that tuberculosis of the peritoneum recovers after operation, because putrefactive bacteria

produced a toxalbumin in the fluid which is fatal to tubercle bacilli in the peritoneum.

REFERENCES.—[1]"Med. Chron." May, 1895; [2]"Med. Week." Nov. 30, 1894; "New York Med. Journ." Jan. 26, 1895; [3]"Amer. Journ. of Med. Sci." Nov., 1894.

ASTHMA. *R. Shingleton Smith, M.D., B.Sc., F.R.C.P.*

Markham Skerritt[1] points out the use of **Caffeine** as an agent of great power in relaxing pulmonary spasm; 5 grains may be given every four hours when a paroxysm is present, otherwise 5 or 10 grains may be administered at bed time, and repeated if an attack should come on. In acute respiratory diseases, where there is cardiac failure, its effect also in stimulating the heart is of great value.

Thorowgood[2] employs **Iodide of Ethyl** in spasmodic asthma as well as in fibroid phthisis; 6 or 8 drops may be inhaled from a piece of lint. Metcalfe[3] has related some surprising results from **Massage** of the chest muscles.

REFERENCES.—[1]"Practitioner," April, 1895; [2]"Med. Chron." March, 1895; [3]"Brit. Med. Journ." Jan. 12, 1895.

Synopsis.—(Vol. 1895, pp. 30, 39 and 136.) Einthoven recommends the use of **Nicotine** and **Atropine**; the latter used hypodermically in very small doses affords speedy relief. Nitro-glycerin, ½-drop doses of a 1% solution, gave relief in one case, but the attack returned directly the drug was exhausted, and if continued the patient could not lie down. Small pieces of ice wrapped in a towel and applied over the pneumo-gastric gave relief in five minutes. The following may prove useful: ℞ Chloralis, Pot. Iodid., āā ʒss; Syr. Aurant., ʒvj; Aq., ʒvj; M. *Sig.*—2 to 5 tablespoonfuls per day. ℞ Lobeliæ Pulv., Stramon. Pulv., Theæ Nigræ Pulv., Pot. Nitratis, āā partes æquales; Misce bene et fiat pulv. *Sig.*—A little to be burned and the vapour inhaled for spasmodic asthma. For bronchial forms: ℞ Pot. Iodid., ʒij; Ammon. Carb., ʒj; Tinct. Lobel., ʒij; Sp. Chloroformi, ʒiv; Vin. Ipecac., ʒj; Infus. Senegæ, q.s. ad ʒvj; M. ʒss in a wineglassful of water every four hours. ℞ Ext. Stramonii, gr. ½; Pot. Iodid, gr. 5; Ammon. Carb., gr. 4; Tinct. Lobel. Æther., ♏ 5; Aq. Chloroformi, ad ʒss; M. et fiat mist. ʒss every four or six hours. **Grindelia Robusta** is valuable, and some cases have been benefited by **Oxygen Inhalations.**

BLADDER (Diseases of). (See also "Cystitis.")

E. Hurry Fenwick, F.R.C.S.

Physiological Impermeability of the Healthy Vesical Epithelium.—Bazy and Sabatin have recently claimed that the bladder absorbs quite as rapidly as the superior portion of the digestive tract, and Tricemi has gone so far as to state that the subcutaneous connective tissue often does not imbibe so quickly. To controvert these assertions, at such variance with theories drawn from the physiological functions and histological character of its lining (pavement epithelium),

the investigations which form the subject of this paper were undertaken by Boyer and Guinard.

Cocaine, morphine, pilocarpine, atropine, eserine, veratrine, and strychnine, were used in doses of 5 to 10 centigrammes, injected through a catheter into the bladder, which contained a little urine left after spontaneous voiding. Some of the animals (dogs) retained the poisoned urine from ten to twenty-one hours—until micturition became necessary—without presenting the least sign of intoxication. A small portion of the urine, injected under the skin of the subject from which it came or of other animals, proved fatal shortly.

The authors, in view of these results, believe themselves justified in the assertion that "the vesical epithelium does not absorb, or absorbs only very slowly, and in such a way that the results of this absorption will be normally inappreciable."

The solutions used by Bazy and his pupil, Sabatin, were of a much greater degree of concentration (*e.g.*, strychnine $\frac{1}{30}$; brucine $\frac{1}{15}$, etc., while the authors' were 1 or 2 to 100), and they were introduced in large doses into a bladder previously emptied by the catheter. They were consequently placed in immediate and direct contact with the mucous membrane. Several of these bladders were examined histologically with an almost constant finding of vascular modification, and taking this with Cazenove's statement that a toxic substance introduced in the bladder may modify the physiological state of its mucous membrane to the point of abrogating its function, they appear to prove a clear case. Guyon has recently (1892) sustained their position.

Infection of the Uninary Tract.—Bartianelli[1] has made a clinical and experimental study of this subject. He first gives a short clinical report of thirty-seven cases of cystitis observed by him, adding in each case the result of bacteriological examination of the urine collected by catheter with all antiseptic precautions. Micro-organisms were present in every case. In twenty-five out of the thirty-seven, only one organism could be cultivated. The organisms most frequently met with (twenty-one times) were microbes belonging to the coli bacillus group (including Eberth's). In nineteen cases there had been no previous surgical interference (no catheterism, etc.) whatever, before the onset of cystitis. The author then discusses the morphology and biology of the various micro-organisms found by him in the urine, and details the results of experimental injection of cultures into the bladder of rabbits. Unless there was previous retention (partial or complete) of urine, or some morbid condition of the mucosa, the injection of micro-organisms never caused cystitis. If they were injected into the veins, they were constantly found again

in the urine, but did not set up cystitis, unless there were predisposing local conditions. Unless pus and micro-organisms were to be found in the urine, cystitis was not evoked. Applying these results to the pathogenesis of vesical infection in man, the author concludes that micro-organisms, by whatever pathway they may reach the bladder, can only induce cystitis when there is some pre-existing morbid condition of the mucosa, or when there is some impediment to the free flow of urine. Under such conditions the germs multiply, and insinuating themselves between the epithelial cells cause diapedesis, suppuration, and local necrosis, finally passing, via the lymphatics, etc., into the circulation and system generally. Neither micro-organisms nor the aforesaid predisposing conditions can set up cystitis if acting alone, but in combination they are efficient causes of the same. The various possible pathways of infection receive full consideration at the authors' hands, and a bibliography and photographs of the inculpated bacilli are attached to the monograph.

Treatment of Cystitis.—Freudenberg[2] has tried **Cantharidin** in fifty-six cases of cystitis. The formula used was cantharidin (Merck's) 0·001 (= 1 mg.), alcohol ad solvend., 1·0; aq. destill. ad 100. A teaspoonful of this was given three or four times a day; larger doses did not succeed if this failed.

Results.—(1,) In five cases no improvement; of these only one was afterwards cured by local treatment after trying other drugs; the other four resisted even operative treatment (cases of vesical tuberculosis, contracted fibrous bladder, etc.); (2,) In nineteen its action was slight, or even doubtful, the strangury alone being improved, or the urine clearing without the cure being complete. In one of these, the cystitis was due to perforating silk sutures after laparotomy, and the strangury was alone improved; in another the bladder had diverticula; some remained, however, in which the drug failed without apparent cause, for example, in one case of gonorrhœal cystitis afterwards cured by sandal-wood oil; (3,) The remaining thirty-two cases were completely cured, often surprisingly quickly. In three cases of gonorrhœal cystitis cantharidin succeeded where sandal wood oil failed.

Conclusions.—(1,) Cantharidin is approached only by sandal-wood oil in its action in cystitis, and the latter is to be preferred if urethritis is present; (2,) Its advantages are its cheapness, tastelessness, and almost complete freedom from unpleasant symptoms, at least in the above given doses, frequent erections being noticed only once (after use for ten days), formication once, and a morbilliform eruption once. Disordered digestion or albuminuria never occurred.

Gonorrhœal Cystitis cured by Influenza.—Goldberg[3] observes that influenza has occasionally been known to produce cystitis. He reports a case in which a man, aged twenty-two, was suddenly and completely cured of a chronic gonorrhœal cystitis by an attack of influenza. The patient was first seen by the author six months after the onset of the gonorrhœa. The urine then contained pus, a small quantity of albumen, but no casts or other formed renal elements. The bladder was tender on palpation. The cystoscope showed the bladder walls to be of a dark greyish colour with prominent muscular fasiculi. Washing out the bladder only produced some slight improvement, the urine still remaining turbid. In an attack of influenza the urine rapidly became clear, and ceased to contain either pus or albumen. The subjective symptoms also disappeared. There could be no doubt of the causal connection between the influenza and the cure of the cystitis, which had already lasted one and a half years. Possibly the toxins of influenza had so impaired the vitality of the micro-organisms setting up the cystitis, as to render their further development impossible.

Rupture of Bladder.—Mr. W. J. Walsham[4] read a paper before the Royal Medico-Chirurgical Society on "Intra-peritoneal Rupture of the Bladder."

The diagnosis was established by inflating the bladder with a few cubic ounces of air, forced in by two or three compressions of the rubber ball of an ether freezing microtome. The abdomen at once became tympanitic, and the liver dulness effaced. The conclusions drawn from a single experience were: (1,) That the amount of air to be introduced need only be very small, not more than three or four cubic inches; (2,) That only very moderate pressure is needed for the inflation; (3,) That the presence of quite a small quantity of free gas in the abdominal cavity is sufficient to establish the diagnosis beyond a doubt; (4,) That the introduction of gas into the abdominal cavity, even in small quantity, is attended by a profound disturbance in the patient's general condition.

The disturbance which followed in this case, at once passed off on opening the abdomen and allowing the free air to escape. It was suggested, therefore, that in future the test should not be applied till the patient was on the operating table, so that should the collapse threaten life the abdomen could be opened at once. In the after treatment of the case it was contended that a catheter should not be left in the bladder: (1,) Because it was not necessary; and (2,) Because of the risk of cystitis and septic infection. A table of twenty-eight recorded cases was cited. Of the twenty-eight cases, eleven recovered, and

seventeen died. In the eleven that recovered, in only one was peritonitis present at the time of operation, whilst conversely in the seventeen that died, in eight, and probably in nine, peritonitis had already set in. The cause of death in the eight cases in which there was no peritonitis at the time of operation was shock or hæmorrhage, or the two combined in five cases, and peritonitis in three, the peritonitis in two out of the three being due to leakage of the rent or giving way of a suture. In no fewer than four out of the twenty-eight cases was the bladder found, at the post mortem examination, to leak. The importance of testing the competency of the bladder by injecting milk or other bland, sterilized and easily detectable fluid could not therefore be too strongly urged.

Tuberculosis of Bladder.—Watson[5] holds that in these cases the outlook is not hopeful for surgical interference. The local treatment of the bladder, when it is the seat of the tuberculous process, is for the most part unavailing. Dilatation of the female urethra sometimes gives short periods of relief, but often fails to do so. Deep urethral injections are injurious. Long-continued drainage through the perineum fails to relieve. Suprapubic cystotomy for relief of vesical tenesmus is markedly successful, especially when supplemented by applications. Curetting and the application of iodoform to the ulcerated mucous surface of the bladder afforded very considerable relief.

Stone in Bladder.—Gilbert Barling[6] publishes a paper on "The Mortality of the various Operations for the removal of Vesical Calculus, especially in children."

Summed up the results are these :—

Litholapaxy : 300 cases, 24 deaths = 1 in 12·5, or a mortality of 8 per cent.

Suprapubic Lithotomy : 169 cases, 26 deaths = 1 in 6·5, or a mortality of 15·4 per cent.

Lateral Lithotomy : 96 cases, 5 deaths = 1 in 19·2, or a mortality of 5·2 per cent.

Median Lithotomy : 48 cases, 6 deaths = 1 in 8, or a mortality of 12·5 per cent.

Adding these together we get a total number of 613 cases ; deaths 61 = 1 in 10, or a mortality of 10 per cent. on the series.

The period covered by the statistics is five years, from 1888 to 1892 inclusive, and they are from the records of six metropolitan and seven provincial hospitals, the majority being medical schools. It would have been unfair to have gone back to an earlier period than that selected, as the high operation was then, so to put it, on probation.

A few comments are necessary. Litholapaxy deals with the most favourable cases of stone, namely, those in which the calculus is of small or moderate size, and its best results are shown under the age of twenty and above fifty.

The suprapubic mortality is especially high in children. The two special dangers ascribed to the high operation, peritonitis and urinary infiltration, appear to Barling to be over-estimated; of twenty-four cases operated upon by that method, in no case has peritonitis ensued, nor has there been any case of infiltration of urine.

In an appendix to his introduction to the "Catalogue of the Collection of Calculi of the Bladder in the College of Surgeons Museum", Sir Henry Thompson gives an analysis of stone cases, all operated on by lateral lithotomy in various metropolitan and provincial hospitals between 1790 and 1840. The total number of Thompson's cases was one thousand eight hundred and twenty-seven, the deaths were two hundred and twenty-nine, the rate of mortality being, therefore, 12·5 per cent. With this may be contrasted the death-rate from the various operations 1888 to 1892; number of cases six hundred and thirteen, deaths sixty-one, mortality 10 per cent.; a reduction of 2·5 per cent. as compared with the previous period.

The figures in detail show that in Thompson's tables the majority of the patients were considerably younger than those collected in Barling's.

Thompson's Tables (Operations from 1790 to 1840):—

Age.	Cases.	Deaths.	Percentage.
1 to 11 inclusive	850	49	1 in 17 = 6 per cent. mortality
1 to 48 ,,	1365	114	1 in 12 = 8·3 ,, ,,
49 and upwards	462	115	1 in 4 = 25·0 ,, ,,
At all ages	1827	229	1 in 8 = 12·5 ,, ,,

Barling's Tables (Operations from 1886 to 1892):—

Ages.	Cases.	Deaths.	Percentage.
Under 10	166	14	1 in 11·9 = 8·4 pr cent. mortality
,, 50	377	32	1 in 11·8 = 8·4 ,, ,,
50 and upwards	236	29	1 in 8 = 12·5 ,, ,,
At all ages	613	61	1 in 10 = 10·0 ,, ,,

Comparison of these figures shows that the general mortality of stone operations is reduced. It shows further that the reduction is due to the greater safety with which operations are now performed after fifty years of age; but it appears to show also unmistakably that

operations for stone in children are attended with a greater mortality than they were fifty years ago. This can only be due to the introduction of lithotrity and suprapubic section. Reference to the first tables shows that to the latter the enhanced mortality must be ascribed.

Barling therefore expresses the opinion that lateral lithotomy and litholapaxy are safer operations in children than the suprapubic at present.

Cocaine Anæsthesia in Lithotrity.—Dr. Chismore[7] advocates the employment of local cocaine anæsthesia in litholapaxy, of cases with enlarged prostate. Since 1889 he has invariably used local cocaine anæsthesia. In a small proportion of these cases mild toxic symptoms, such as nervousness, restlessness and perspiration, were observed; these were never very pronounced—certainly not sufficiently so to induce him to suspend the operation, or discard the use of the drug. In some cases he has employed eight ounces of a 4 per cent. solution; in others a much less quantity. About an ounce, or an ounce and a half, is injected into the deep urethra and allowed to flow back into the bladder. The prostatic urethra is thus cocainised by simple contact. After the injection has been allowed to remain in the bladder for a few minutes, the lithotrite is introduced, and as much of the stone is crushed as possible. If he wishes to increase the dimensions of the bladder, he injects a solution of boric acid.

In cases with prostatic enlargement, the bladder is far more tolerant than in young persons, and a fragment of stone left behind does not give rise to much inconvenience.

In injuries to the deep urethra, we must look for the principal source of danger in almost all operations which involve a manipulation of this part of the canal. To avoid inflicting such injury, Dr. Chismore now employs a much smaller lithotrite than formerly.

A study of these cases seems to show that a patient is no safer from recurrence of stone, after suprapubic cystotomy than he is after litholapaxy. As regards the perineal incision, it must be borne in mind that in these cases the perineal distances are much increased, and we may utterly fail to reach the stone after making an opening in this region. Chismore's method is a combination of lithotrity and litholapaxy—*i.e.*, if he has any difficulty in seizing a fragment, he leaves it till a subsequent occasion—simply evacuating as much at a sitting as can be readily seized and crushed.

Tumours of the Urinary Bladder.—E. Hurry Fenwick[8] gives an abstract of notes upon a series of seventy operations for the removal of tumours of the urinary bladder. The value of an intelligent and skilful electric cystoscopy in determining the presence and the charac-

ter of vesical tumours, and in indicating the propriety of removing them is amply borne out by the results obtained in this series. The following points were submitted for discussion.

Benign Tumours.—Although benign papillomata of the urinary bladder are characterised by the symptomless appearance of blood, causelessly and intermittently, in normal urine, yet there are some papillomata which evoke symptoms which markedly resemble stone in the bladder. This deviation from the ordinary type is due to the length of the pedicle or stalk, which favours the free excursion of the tumour and allows it to get swept into the orifice of the bladder, and to act as a partial or a complete plug. Benign papillomata, therefore, readily fall into two divisions, the non-obstructive and the obstructive. Of these, the former are by far the more common. The author holds very strongly that the calculus sound should not be employed in either case. In the non-obstructive group the symptoms are so definite and so dissimilar to stone, that its employment in males under fifty years of age is not only useless, but detrimental. After fifty years of age, cases are encountered in which small uric acid stones, lodging behind an upraised prostate, produce symptoms similar to those of benign growth, and the sound is permissible.

In the obstructive group of papillomata, a cross-examination of the onset symptoms will permit of a diagnosis of pedicled tumour being made rather than that of stone, and a distinct danger is avoided if the patient's bladder is not interfered with. In the obstructive group, backward renal pressure has already been exerted by the plugging; there is always more or less residual urine, and the sound or the catheter is extremely prone to induce cystopyelitis.

In all cases in which a vesical growth is suspected, it is much wiser to cystoscope in a period of calm between the attacks of hæmaturia, and to arrange that the bladder be full of urine at the time.

In all cases of growth, if the bladder has not been meddled with, the urine in these intervals will be seen to be quite clear, and the growths are exhibited to their best advantage. Failing a cystoscopy, a finger-breadth-sized opening suprapubically is the best method of examination.

With regard to operation, the true surgery of the disease is to make the operation coincident with the examination. All those cases in which the operation has been performed immediately after the cystoscopy have done well. These remarks apply equally well to operations for the removal of stone from the bladder. Women seem more prone to produce pedicled papillomata than men. Many of these growths can be cleanly removed through the dilated urethra, either

with forceps or through cannulæ, but the surgeon should always obtain permission to operate through the vaginal septum or suprapubically, in case he should find that the base is extensive, or the pedicle very thick. In men, the only certain and surgical route is the suprapubic.

The bleeding from the base of the ablated tumour should be arrested before the patient leaves the table. The best means to effect this, is probably a silk ligature left hanging out of the bladder, or the application of iron through a Keith's tube.

Malignant Tumours.—In the case of malignant growth, the hard slow-growing single button of carcinoma can be removed with a fair prospect of successful delay of the course of the disease, provided that the base and submucous tissues beneath the tumour be removed with the knife. Munching the surface of a carcinoma and leaving the base, is tantamount to an increase in the rapidity of its growth. Malignant growths, situated on or near the trigone, do not repay removal, and always resent interference. If they obstruct, they had better be treated by suprapubic drainage. All infiltrating growths, as detected by rectal, or by bimanual examination under ether, and all multiple or "contact" growths, as discovered by the cystoscope, are inoperative. Small, single, indolent malignant growths may be removed even when they have so far advanced as to become glued to the muscular coat, provided that the entire thickness of the subjacent bladder-wall be resected with them. This is, of course, only feasible in the anterior, lateral, or posterior wall of the middle and upper zones. When the peritoneum is included in the ablation, free drainage of the bladder must be maintained in order to afford the bladder wound time to heal. As an example of the value of resection, a case is quoted in which Mr. Fenwick ablated a large piece of the left lateral wall of the bladder for epithelioma, two years ago. The patient is still at work and in good health. Mr. Fenwick sums up his results as follows: The seventy ablations include recurrences. There were five deaths, two as the direct result of the operation. The remaining three deaths occurred in carcinomatous cases at or about the third week after the operation, the patients dying of renal complications.

Resection of the Bladder.—Chevalier[9], in a paper on this subject, classifies the operations as partial or total. Partial resection may be extraperitoneal or peritoneal, or may involve both surfaces. When practised for the removal of tumours, the resection may involve simply the tumour and the zone of infiltration, or may include the entire thickness of the bladder, measures being taken in this case to prevent perivesical infection. In man, excepting the trigone and the region about the ureters, the extirpation of the entire bladder is possible.

Partial extraperitoneal resection of the anterior wall has been frequently and successfully practised. Excepting when a neoplasm is strictly limited to the extraperitoneal portion of the bladder, it is best to make the resection from within outward. As to resection of the vesical neck, Chevalier bases his results upon cadaveric operations. The lateral walls of the bladder can be rendered extraperitoneal, since stripping the peritoneum in this region is very easy. In operating, the exact position of the tumour is determined by the ordinary cystotomy. The finger is passed behind the pubis, freeing the anterior and lateral surfaces of the bladder ; then with a pair of curved scissors the entire zone of infiltration is cut away. There is very little hæmorrhage, and what bleeding occurs is readily checked. The defect in the tissue is closed by sutures placed either vertically or antero-posteriorly, according to the position of the wound. Then the opening made into the anterior wall of the bladder is closed, and a permanent catheter is placed in the urethra. When the tumour involves the trigone and *bas-fond*, resection must be made from within outward. Before undertaking this, the ureter should be catheterized. If the ureter is not involved, this canal is readily separated. The resection should be carried to, but not through the rectal wall. If the tumour is very large, the projecting portion may first be removed, and then its point of attachment may be dissected out ; by means of tenacula, the base of the bladder may be drawn upward and made more accessible. If the ureter is involved, all diseased tissue should be taken away. The healthy end of the ureter can then be stitched to the bladder or may be allowed to remain at the bottom of the wound resulting from extirpation. Other alternatives are to secure the ureter in the rectum, but this is not advisable ; to the vagina, which is sometimes necessary ; to the external surface, which at times is the only feasible procedure ; or, finally, it may be ligated and left in the abdomen, but only when implantation into the bladder is impossible. Partial resection of the peritoneal surface of the bladder has not given very encouraging results.

Clado's peritoneo-vesical resection is thus performed : through the ordinary suprapubic cystotomy wound the tumour is first separated, and as much of a pedicle as possible is formed. By means of fingers placed behind the tumour an effort is made to double the bladder-wall upon itself, which will bring together the peritoneal surfaces just beyond the line of resection. This whole turned-in mass is seized in a pair of long curved forceps. The tumour is then separated, the pedicle being seized with smaller forceps placed in sound tissue. The bladder is tamponed with iodoform gauze, the cystotomy wound partly closed,

laparotomy performed, and suture applied, by means of which the two peritoneal surfaces held in apposition by the long curved forceps are permanently secured. Two or three lines of suture may be applied. The abdominal wound is then closed, and the neoplasm, together with its peritoneo-vesical base of attachment, which has been turned in, is removed, the mucous membrane being brought together by suture. If the tumour is very large, it may be removed by the galvano- or thermo-cautery. Hypogastric drainage is employed.

Total resection of the bladder has always been fatal in men. Clado has had one success in the case of a woman, the ureters having first been secured in the vagina, and then, twenty days later, the bladder having been resected.

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Synopsis.—(Vol. 1895, p. 138.) Pain in cystitis is relieved by a solution of **Antipyrin**, 1 in 25, of which 10 to 20 grammes are thrown into the bladder and left for ten minutes (Vigneun). Colosanti advises washing out with ½ to 1% **Ichthyol Solution** for pain, destruction of micro-organisms, and checking of ammoniacal fermentation in catarrh. Rusconi reports disappearance of vesical paralysis following typhoid after the use of five injections of **Testicular Juice**.

BLENNORRHAGIA.

Theophilus Parvin, M.D., Philadelphia.

TREATMENT.—Doléris[1] states that the practitioner finding himself in presence of diffuse affection that has extended to the appendages, the body of the uterus also attacked, as indicated by increased volume, hæmorrhage and pain; rest, and the use of frequent vaginal injections containing **Corrosive Sublimate** should be employed. Further, use vaginal tampons of **Glycerine** combined with antiseptics and narcotics; if pain requires it, revulsives to the abdomen; emollients and balsamics, if there is urethritis, are of great service. This is the treatment of the acute stage, in which the condition of the epithelium and the mucous derm forbid all energetic action.

In sub-acute or chronic cases the cervix becomes the habitat of choice of the gonococcus. After having made there its first conquest, it remains there last. This localisation indicates the treatment. It is necessary to destroy all gonococci by appropriate means, **Potassic Permanganate, Zinc Chloride, Creasote,** etc. Moreover, the surgeon

must keep the cervix open in order that the glandular *cul-de-sacs*, the last refuge of the enemy, may readily be reached by the microbicidal substances.

REFERENCE.— [1] "Revue Medico-Chirurg. des Maladies des Femmes."

BOILS. (See "Furunculosis.")

BRAIN (Surgery of the). *William Thorburn, F.R.C.S.*

The most important feature of the year's work in this department of surgery seems to be the unanimity with which the operation of exploratory trephining is advocated in all cases, whether of accident or disease, in which there are signs of increased intra-cranial tension. The great question has been not, "Should the skull be trephined?" but "Where should the skull be trephined?"

Bramwell,[1] in the discussion on Intra-Cranial Surgery, before the Medico-Chirurgical Society of Edinburgh, gives a most complete summary of the subject from the physician's point of view. On the question of Intra-Cranial *Tumour*, he insists on the extreme rarity of cases suitable for removal, for the following reasons :—

(1,) In a certain number of cases the tumour is not characterised by any symptoms during life which enable a positive diagnosis to be made.

(2,) In many other cases, where the cardinal symptoms are well defined, there is an entire absence of localising symptoms. He instances, in this connection, a case in which a sarcoma had destroyed the whole posterior half of the inferior frontal, the lower half of the ascending frontal and parietal convolutions, and the outer half of the island of Reil, without a trace of paralysis or any other localising symptom.

(3,) In some cases, where there exist localising symptoms, these symptoms give an erroneous impression as to the position of the tumour. Thus, a case is recorded of a man with numbness and stiffness of the left leg, spasmodic contractions beginning in the left great toe, and pain and tenderness over the right side of the head, associated with slight optic neuritis. The patient had had syphilis, and syphiloma of the right motor area was diagnosed. After iodide had failed, trephining was resorted to, and the areas found normal. *Post-mortem*, a glioma of the right optic thalamus was seen, involving the posterior division of the internal capsule.

(4,) In many cases where the exact position of the tumour is localised by symptoms, operation is impossible or uncalled for. Under this head are included tumours of the base of the brain, tumours of widely diffused or malignant nature, tubercular growths

usually associated with disease elsewhere, and syphilomata, which often yield to treatment. However, a large gumma, although improved by medical treatment, necessarily leaves a cicatrix, which often requires surgical intervention.

Eighty-two cases of intra-cranial tumour occurring in the author's practice are analysed from the point of view of the surgeon. One was found *post-mortem* with no localising symptoms during life; eighteen presented no localising symptoms; in thirty-two (including twelve cases of cerebellar growth), the position and large extent precluded surgical interference; in one there were multiple growths; in five the growth was malignant; twenty (mostly syphilitic), improved markedly under medical treatment. That is to say that, in seventy-seven cases out of eighty-two, operative interference was, for one or other of the above reasons, contra-indicated; of the remaining five, three were good cases for operation. As regards *post-mortem* evidence, the certainty of diagnosis and position, probably, to a large extent, counterbalance the natural objection that at the time of death the tumour has grown too large for removal. Of twenty-two *post-mortem* examinations on the author's own cases, in seventeen operation was absolutely contra-indicated; and of the five remaining cases, there were no localising symptoms in three. One died by accident after showing temporary improvement under treatment, and in only one case was successful removal possible. Of twenty-eight other cases examined *post-mortem*, only one case was in any way suited for operation.

Although successful removal of the tumour is possible in so small a proportion of cases, much good may be done, the author admits, by palliative trephining. This is especially recommended in the following classes of cases: (1,) In not a few cases the headache is intense, and Hughlings Jackson has shown that in some of these sudden death takes place, apparently as the result of mere severity of the pain and sudden inhibition of the heart's action; (2,) In other cases the intra-cranial pressure is greatly increased, and the patient dies either suddenly in an epileptic fit, or gradually from respiratory failure. Here great relief may be given by continuous drainage of cerebro-spinal fluid; (3,) In cases with marked optic neuritis, the consecutive atrophy may be prevented or lessened by early trephining; for this reason the operation seems indicated in some cases of lead encephalopathy; (4,) Trephining, with partial removal of a cerebral tumour, often produces a retarding influence upon the development and growth of the remainder. The author concludes that the operation in many cases relieves suffering, prevents blindness, and prolongs life.

In *epilepsy*, Bramwell makes the following classification of cases suitable for surgical interference: (1,) Cases of traumatic epilepsy in which there is a distinct scar or depression on the surface of the skull, and in which the epileptic discharge begins in the portion of grey matter immediately under the seat of the external injury. In such cases trephining is clearly indicated. If the general fit is preceded by a sensory aura and not by a localised spasm, the operation is much less likely to be successful; (2,) Cases of traumatic epilepsy, with a scar or bone-depression, in which localised spasms, or an aura of some kind, show that the epileptic discharge begins in a portion of grey matter which does not correspond to the original injury. Medical treatment having failed, he recommends the exploration, first of the cortex beneath the seat of injury, and, if that be normal, trephining over the area of grey matter first discharged in the fit; (3,) Cases of true epilepsy in which a scar or depression marks the position of former injury to the skull, but in which the fits begin with a general discharge and present no localised spasm or aura. Here operation may be tried, but the results are not likely to be good; (4,) Cases of idiopathic epilepsy, in which the fit always commences with a constant and definitely localised spasm or aura, indicating the position of the area of grey matter first discharged. Here good results have occasionally been obtained, and it is to be noted that the paralysis following excision of a portion of the motor area is not necessarily permanent. In this connection it is interesting to note that Championnière[2] reports fourteen cases of true epilepsy which he trephined. Twelve cases were improved by the operation, more than half of them very much so, while only two were not benefited.

Bramwell also refers to the benefit likely to result from trephining in cases of tubercular meningitis, and mentions Chiene's case ("Medical Annual," 1894, p. 129) as an example of the advantage of operation in relieving the increased intra-cranial tension in some cases of cerebral hæmorrhage.

Horsley[3] urges trephining as the most potent, if not the only means of giving relief in cases of cerebral tumour. In every case operated upon, the effect has been to relieve the pain. Vomiting, too, is dependent on raised intra-cranial tension, and ceases with its diminution. In the majority of cases the optic neuritis subsides within three weeks of operation, but if atrophy have already commenced, complete recovery of sight is hopeless. Of course, where cerebral tumour comes under observation too late for successful extirpation, the operation of De Wecker might be performed to arrest the neuritis; but, in view of the con-

current and equally important relief of headache, the author would, in preference, open the skull. Convulsions are often most beneficially affected by the operation.

Starr and McCosh[4] record a case which has an important bearing on cerebral localisation. The patient suffered from traumatic epilepsy, with psychical attacks, and pain in a scar between the left parietal eminence and the middle line. There was headache over the left parietal and occipital regions. The skull was trephined over the site of the injury, 1¼ inches to the left of the middle line, 1¾ inches behind the fissure of Rolando, and 1 inch above the parietal eminence. Nothing but a localised vascular dilatation of the pial veins was found. The exposed part of the brain was explored with a needle, and the nævus ligatured and removed. The wound did well. Immediately after operation it was found that there was absolute loss of muscular sense in the right arm and hand, although there was actually greater power in this arm than in the other. This persisted for three weeks and then gradually subsided. Injury, during the operation, to a part of the cortex corresponding to the junction of the superior and inferior parietal convolutions, clearly behind the posterior central convolution, had resulted in a loss of muscular sense in the opposite hand and forearm, without any disturbance of other sensations or of motor power. This observation is against the theory that perception of movement is an inherent power of the motor area.

Much has been written, during the year, on the question of *Craniectomy for Idiocy and Microcephaly*, and many cases have been recorded, often with the most fragmentary accounts of symptoms both before and after operation. Jacobi,[5] in a paper read before the Medical Congress at Rome, gives a good account of the present position of the subject. He analyses the accompanying pathological conditions, and finds that the majority are cases of chronic encephalitis, meningo-encephalitis, arrests of development such as porencephaly (usually however with a thin cranium), hydrocephalus, and cysts or hæmorrhages from injury at birth. But few cases show premature ossification of fontanelles or sutures, and the difficulty is in diagnosing this, the only condition at all suited to surgical interference. In many cases, however, the premature ossification is universal, but the superior maxilla is more affected by the general process than other bones, and the teeth appear early, the upper ones first. The more irregular the cerebral symptoms, the more unilateral or confined to one limb or one set of muscles, the greater the probability of a combination of brain disease with the premature

ossification. As regards the result of the operation, it appears certain that the cicatricial tissue which develops is in many cases quite as antagonistic to cerebral growth as the bone which it replaces. He gives forty-one operations on thirty-three well-recorded cases, with fourteen deaths. Of the nineteen recoveries there was slight improvement in eight, and considerable improvement in two.

Dakerman[6] concludes: (1,) That craniotomy or craniectomy is justifiable when the parents are eager and the patient strong; (2,) That too much bone should not be removed on one side, the operation being repeated if necessary on the other; the periosteum should be removed with the bone; (3,) The results are most favourable when the microcephaly is accompanied by epileptiform convulsions, muscular spasms, rigidity or localised paralysis; (4,) No certain diagnosis of the pathological conditions can be made, and it is impossible to predict the benefit, if any, which will result.

Cerebral Complications of Middle-Ear Disease.—In 1893, Macewen[7] published the first really complete account of the pathology and treatment of these troubles. He recognized the mastoid cells and the middle ear as the primary source of infection in the great majority of cases, and showed that the intra-cranial abscess is rarely far removed from the infective focus, and that the rational mode of treatment is, if possible, to drain the abscess and destroy this focus by one and the same procedure. The mastoid antrum is the key to the position in all operations whose aim is to expose the mastoid cells, and much care is devoted by the author to the detail of a safe operation for the opening of this cavity. A "supra-meatal triangle" is described, lying between the posterior root of the zygoma and the posterior bony wall of the external meatus, a triangle which can almost always be detected upon making an incision immediately behind the pinna, and of which the upper and anterior part corresponds to the most accessible portion of the antrum. The opening is made by the bur, worked by the surgical engine, and the chisel and trephine are alike condemned. By this means the cavity is exposed, and a careful search then allows us to detect perforations in its walls, whether these be on its posterior wall and connecting with the sigmoid sinus, or on its roof and opening into the skull. The tympanum is also opened from this region, and the ossicles dealt with as required; or, again, the roof of the cavity is explored for perforations. By tracing out such perforations, the localisation of the cerebral abscess is effected, and the author confines his surgical intervention to this route, except in the case of large accumulations in the brain or cerebellum. Large abscesses are evacuated by secondary trephine openings in the skull. The sigmoid

sinus is also laid bare, if necessary, through the mastoid antrum, and purulent matter removed by careful scraping.

At the congress in Rome, Macewen[8] gave some later results of his work in this direction, and formulated his conclusions as follows : (1,) That all abscesses of the brain are formed subsequently to a primary focus of infective disease situated elsewhere ; (2,) That the chief infective foci are formed in connection with middle-ear disease ; (3,) That abscesses of the brain originating in middle-ear disease are generally in continuity with the primary source of infection ; (4,) That such abscesses are generally best reached in the first place through the mastoid antrum ; (5,) That the mastoid antrum is most easily opened through the supra-meatal triangle, from which the whole tegmen antri and tegmen tympani can be exposed ; (6,) That it is necessary to remove the whole infective tract ; and (7) After this is done, the skull may, if necessary, be trephined over the temporo-sphenoidal lobe of the brain.

Von Bergmann,[9] describes an operation by which the upper and anterior surfaces of the petrosal bone are exposed through a quadrangular opening made in the squamous portion of the temporal bone, just above the line of the zygoma, and between a line drawn in front directly upwards to the sagittal suture from the tragus, and a parallel line behind carried upwards from the posterior border of the mastoid process. By this wound the mastoid antrum and cells may be opened if necessary, and the sigmoid fossa be reached, while, at the same time, the temporo-sphenoidal lobe is exposed.

When the lateral sinus is thrombosed and the clot is extending down the internal jugular vein, as an additional safeguard ligature of the veins well below the thrombus has been now carried out in many cases. Lane[10] reports ten cases in which this was done after careful cleaning of the sinus and mastoid cells, nine of the patients making a complete recovery—still it seems certain that many cases recover in which the mastoid cells are carefully cleared, and the thrombosed jugular left severely alone.

Starr[11] and Horsley[12] have called attention to the comparatively rare condition of *leontiasis ossium*, and the latter author describes five cases, in three of which the disease was removed by operation. The term is restricted to a development of bony new formation resembling growth of diploë, and attacking the cranial and more especially the frontal bones. In all the five cases the condition began in childhood or early youth, and in three exophthalmos appeared before there was any notable projection of the supra-orbital ridge. The most prominent symptom was the pain produced by pressure on

the branches of the fifth nerve. In no case was there any evidence of syphilis, or history of injury. In cases where operation was possible, the mass was readily removed piecemeal, the limits of the tumour being easily recognized by the great vascularity of the diseased part.

Fenger[13] reports an interesting case of a *meningo-encephalocele* projecting through the sphenoid into the posterior nares. The tumour was mistaken for a polypus and removed by the *écraseur*. A discharge of cerebro-spinal fluid took place, so the superior maxilla was resected by Langenbeck's method, and the pedicle ligatured. The patient made a complete recovery.

Parkin[14] again calls attention to his method of operating for the relief of excessive *intra-cranial pressure* in chronic hydrocephalus by the withdrawal of cerebro-spinal fluid from the basal subarachnoid space. He reports a most successful result in the case of a child already almost comatose. A horsehair drain was inserted, after gently raising the cerebellum, and brought out at the angle of the wound, which was sewn up with a continuous suture. The drain was kept in as long as it acted, and was removed after eighteen days. It is important, the author says, that such cases should be relieved before complete coma is present. A temporary relief by aspiration of the ventricles seems to be productive of temporary improvement only, but constant drainage gives time for the re-establishment of lymphatic absorption, just as in the analogous condition of serous cysts and hydroceles.

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BRAIN (Tumours of). (See "Cerebral Tumours.")

BRAIN AND SKULL (Injuries of). *William Thorburn, F.R.C.S.*

In discussing the treatment of *Traumatic Cerebral Hæmorrhage*, Chiene[1] insists on the importance of the first symptoms which arise after the patient has passed out of the state of concussion. During the period of consciousness, one of minutes it may be, he should be constantly watched. In several cases operation has been neglected, or trephining performed over the wrong area, on account of the

misleading character of the later symptoms, no careful observations having been taken of the first onset of irritative signs in the period of consciousness between concussion and hæmorrhagic compression.

The question of diagnosis in cases of middle meningeal hæmorrhage is discussed by Dercum.[2] The cardinal symptoms are: (1,) A distinct interval of consciousness between the primary stunning and the secondary coma; (2,) Dilatation of the pupil; and (3,) Signs of implication of the motor area on the side of the hæmorrhage. The value of localising symptoms has often been shown to be negative. It is most important to remember that the meningeal hæmorrhage itself may be but one effect of the injury, and that although this may be the only naked eye lesion found *post-mortem*, yet other parts of the brain may have been seriously injured, and show microscopic lesions which would account for many abnormal symptoms. Cases have been recorded where spasmodic symptoms were on the same side as the lesion, others where the paralysis was on the same side and the spasm on the opposite. When the convulsions are on the side of the hæmorrhage, they may be the result of reflected irritation through the branches of the fifth nerve to the pons. Again, the hæmorrhage has been found on the opposite side to a dilated pupil. This may be due to the fact that the optic nerve has been nipped in the foramen by a fracture on that side, or else to the fact that the opposite oculo-motor centre has suffered. It seems possible that the pupil dilatation may be due to the greater liability to injury of the iris nuclear cells and fibres, owing to their structure being more delicate than that of other parts of the oculo-motor centre. As the symptoms may be so equivocal, it is certainly wise to trephine over the other side, when hæmorrhage from one meningeal has not been found; although the very fact of the abnormality of symptoms, which makes the second operation necessary, probably points to other serious brain injury in addition to the meningeal hæmorrhage.

Delorme[3] made a series of experiments on the cadaver in order to determine the possibility of extracting bullets lodged in the brain. The shots were fired at distances of from two to five paces, and the weapon used was an ordinary commercial revolver, not a military one, which would give very different results. The facts arrived at are as follows: (1,) The great facility with which the sound or probe traverses the brain substance. In no single instance was the track of the ball followed or found by this means. A soft celluloid probe was found equally useless, as it gave no indication when either bone or ball was reached; (2,) The presence of large and numerous splinters

of bone and of hair both in and around the track of the ball; (3,) A ball lodged deeply in the brain can hardly be found ; (4,) Splinters of bone could never all be found and removed. He also concludes that, (5,) The smaller the orifice of entrance, the less the velocity of the ball and the greater the chance of finding and removing the ball and splinters, which are often discovered either lying on the separated dura or quite near the orifice.

Horsley[4] calls renewed attention to the fact that in fatal cases of cerebral compression, death is due to respiratory failure. He concludes, from experiments, that a rise of intra-cranial pressure caused a slowing and diminution in force of the respiratory movements, and later arrest of the same. In each of the common causes of increased intra-cranial tension, *i.e.*, tumour, abscess, and hæmorrhage, sudden death is apt to occur from arrest of respiration, unless the pressure be relieved by trephining. In illustration, the author mentions three cases of cerebral tumour, operated on by him, in which failure of respiration occurred during the operation. Artificial respiration was at once resorted to, and the skull rapidly and adequately opened with the trephine and bone forceps. In each instance normal respiration returned. In experimenting on monkeys it was found that hot irrigations (100°—105°F.) were very beneficial in restoring the activity of the respiratory centre. The author concludes that in all cases of head injury where death seems imminent, the treatment should be: (1,) Artificial respiration ; (2,) The application of heat to the head preferably by irrigation, a 1 in 10,000 solution of perchloride being used ; (3,) Trephining. The routine use of ice-caps in head injuries ought to be given up.

REFERENCES.—[1] "Edinburgh Med. Journ.," June, 1894 ; [2] "Trans. Philadelphia Neurological Soc.," Feb., 1894 ; [3] "Gaz. des Hopitaux," March 13, 1894 ; [4] "Quarterly Med. Journ.," vol. ii., part iv., 1894.

BREAST (Cancer of). (See "Cancer.")

BREAST (Diseases of).

Synopsis.—(Vol. 1895, p. 147.) In galactophoritis, Boissard insists on immediate **Cessation of Lactation** from the affected breast. He advises putting the patient under **Chloroform** and applying **Pressure** until all pus has been squeezed out of the breast. The breast should then be freely rubbed for half an hour with **Solution of Sublimate** or **Naphthol**, and a compress is kept applied until the manipulation is renewed, only three or four *séances* being necessary. Verneuil advises **Compression** for cystic disease, as well as inflammation of the breast, by means of light perforated leather stays laced behind; layers of cotton wool are placed between the breast and the apparatus. This treatment, together with **Arsenic** and **Alkalies** internally, has been successful, and also in one case of marked mammary hypertrophy. For cracked nipples **Antiseptic Washing** is

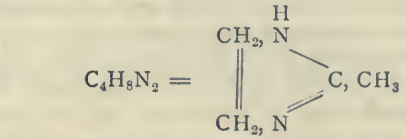
useful, and Pinard uses a compress of **Boric Acid Solution** constantly applied. Lepage advises regular washing of the nipples with: ℞ Red Iodide of Mercury, 10 to 20 centigrammes (2 to 4 grs.); Spirit of Wine, 50 grammes (1½ ounces); Glycerine, 500 grammes (1 pint); Distilled Water, 450 grammes (1 pint). Should ulceration appear after using this, boric acid solution may be substituted. Any crack that may develop is covered with tarlatan moistened with the **Mercuric Solution.**

BREAST (Galactorrhœic). (See "Galactorrhœa, Obstinate.")

BRIGHT'S DISEASE. *Prof. R. Saundby, M.D., F.R.C.P.*

An addition has been made by Felsenthal and Bernhard[1] to our stock of ideas respecting the etiology of nephritis. Guided by the analogy of the nephritis met with in cholera, they have investigated the condition of the kidneys in the gastro-intestinal troubles of children, and find that though albuminuria and casts are only occasionally present, the kidneys in fatal cases present changes resembling those seen in cholera kidneys. The success attending the use of **Thyroid Extract** has induced several attempts to imitate the method, and renal tabloids have come into the market for the treatment of Bright's disease. I have administered them to every case of nephritis I have had under my care during the past year, and have been unable to observe any effect at all. Many cases of chronic nephritis are so closely related to the uric acid diathesis, that any drug which holds out a prospect of successfully combating this condition is of value. One of the last new remedies is **Lysidine.**

This substance, according to Prof. Ladenburg, is identical with ethylene-ethenyl-diamine. Its composition corresponds to the following formula :—



He found it to possess five times the power of piperazine as a uric acid solvent, and Grawitz,[2] working with it in Prof. Gerhardt's clinic has confirmed this report of its value. The dose is from 30 to 75 grains daily in aërated water.

REFERENCES.—[1] "Archiv. f. Kinderheilk.," vol. xvii., p. 222; [2] "Deut. Med. Woch.," 1894, No. 41.

BRONCHITIS. *R. Shingleton Smith, M.D., B.Sc., F.R.C.P.*

Lancereaux[1] recommends, in fœtid forms, **Sodium Hyposulphite,** 60 grains daily, in syrup of eucalyptus or in a mucilaginous julep.

Chaplin[2] in the treatment of fœtid expectoration, commonly

arising from bronchiectasis, confined the patient to a chamber of about seven feet square in the centre of which was placed a dish containing commercial coal-tar **Creasote**, which was heated so that the fumes would quickly fill the chamber and penetrate the dilated bronchial tubes. After these inhalations the sputum, previously containing diplococci and putrefactive bacteria, no longer contained putrefactive germs, and guinea pigs injected with it did not die. The inhalations had not been found to produce any benefit in phthisis.

To counteract the tendency of the staphylococcus albus to extend beyond the limits of the nasal mucous membrane, Maurel[3] chose **Iodoform** in the form of vapour (cotton saturated with iodoform as a nasal plug) and pastilles. It was thought that the coryza disappeared rapidly without causing descending bronchitis.

REFERENCES.—[1] "Journal des Praticiens," No. 27, 1894; [2] "Brit. Med. Journ." Nov. 24, 1894; [3] "New York Med. Journ.," Feb. 9, 1895.

Synopsis.—(Vol. 1895, pp. 28, 39 and 149.) Inhalation of **Ethyl Iodide** at intervals of about two hours in sub-acute cases. Some cases are benefited by **Oxygen Inhalations**. In general, rest is required in a room of moderate temperature, with **Hot Drinks**, small doses of **Syrup of Tolu** and **Alcoholic Stimulation**. In addition: ℞ Tinc. Aconit., gtt. 30; Syr. Narcein., ʒj; Aq. Lauroceras, ʒiv; Aq. Menth. Pip., ʒiij; M. ft. mist. *Sig.*—ʒij every two or three hours. The chest may be painted about the area of the episternal notch with **Iodine**. Or, in the stage when expectoration is just beginning and fever still present: ℞ Kermes Mineral, gr. 7; Syr. ʒiv; M. ft. mist. *Sig.*—A teaspoonful every two or three hours, and at night small doses of **Morphia** and **Chloral** in simple syrup and given in milk for the relief of cough. For chronic bronchitis it is well to give a teaspoonful of **Cod-liver Oil** with **Creasote**, and after each meal the following: ℞ Sodæ. Arseniat., gr. j; Sod. Iod., ʒij; Aq., ʒviij; M. ft. mist. *Sig.*—ʒss t. i. d. Or: ℞ Terpine Eucalyptol, āā gr. 3; Ft. Capo., j. *Sig.*—T. i. d. In chronic cases the skin should be sponged daily with warm water and alcohol, followed by brisk friction. Tobacco should be eschewed. In fœtid bronchitis: ℞ Eucalyptol, ʒj; Alcohol (90%), ʒiij; Aq. ʒvj. To be used in an inhaler every two hours. The following pill should also be taken: ℞ Creasote, Terpine, Iodoform, āā gr. j. Ft. pil. *Sig.*—Pil. j t. i. d. In infectious bronchitis Huchard attacks the mouth fermentation, advising frequent washings with **Boric Acid**, **Carbolic Acid** or **Resorcin**, and for bronchial antisepsis **Creasote**, **Eucalyptol** or **Camphorated Guaiacol** (guaiacol, 5; camphor, 20; sterilized oil, 100 parts); the creasote in oil (1 in 15) and the camphorated guaiacol are used subcutaneously. If the infection has done its work, **Ether** or **Caffeine** injections are coupled with the above oils. Bronchitis (with pleurisy or colds in cases of improving pulmonary tuberculosis) is benefited by: ℞ Phenol Salicylate (or Cinchonidine Salicyl.), grs. 3 to 5; Terpin Hydrate, grs. 3 to 5; Codeine Sulphate, gr. $\frac{1}{12}$ to $\frac{1}{8}$; M. Dispense in capsules. Dose: 1 every two to four hours with water. ℞ Sod. Chlorid., gr. 4; Sod. Bicarb., gr. 12; Sp. Chloroformi, ♏5; Aq. Camph. ad ʒj. M. et ft. mist. *Sig.*—ʒj q. d. A mild saline expectorant in bronchial catarrh.

BRONCHORRHŒA.

Synopsis.—(Vol. 1895, pp. 28 and 152.) Inhalations of **Iodide of Ethyl** about every two hours. ℞ Copaibæ, ʒiij; Tinc. Chloroformi Co., ♏ 20; Mucilag. Acac., ʒvij; Liq. Potass., ʒj; Aq. Cinnamomi ad ʒviij; M. et ft. mist. ⅛ part t. i. d. s.

BUBOES. *Priestley Leech, M.D., F.R.C.S.*

TREATMENT.—Fontan's treatment of buboes is warmly recommended by Rullier,[1] who reports seven cases treated in this way. The treatment is as follows: Thorough antiseptic cleansing of the region, followed by puncture and complete evacuation of the pus. The abscess cavity is then washed out with 1 to 1000 **Bichloride Solution**; if this causes bleeding, pressure with wet bichloride cotton is made, and the hæmorrhage ceases; 10 per cent. **Iodoform Vaseline Mixture,** liquefied by heat is then injected, and a bichloride dressing applied. The pus cavity should be filled but not distended. The iodoform vaseline mixture is liquefied by placing the vessel containing it in a water bath heated to 116°F. The pain disappears from the first day, the periadenitis rapidly lessens, and cure takes place in six or seven days, leaving no cicatrix or other visible trace. In 12 per cent. of cases the puncture closes at once, and the patient is able to resume his duties in one or two days.

In most cases there is some discharge of vaseline with a few drops of pus for a few days; the wound should then be washed antiseptically and dusted with iodoform. If the cavity is not obliterated, inject again in two days, and a third injection if required two days later.

If the skin is so thoroughly devitalised that sloughing takes place, the treatment is then inefficacious.

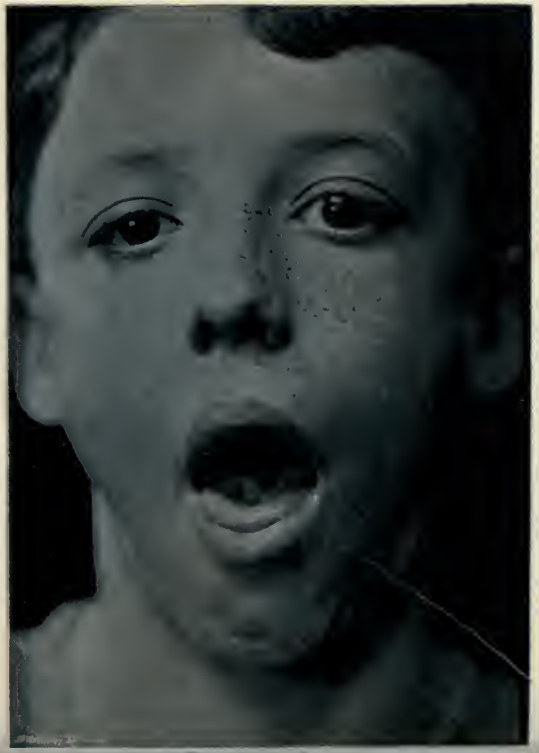
REFERENCES.—[1] "Archives de Médecine et de Pharmacie Militaires," No. 3, 1895; abstract in "Therap. Gazette," April 15, 1894.

Synopsis.—(Vol. 1895, p. 152.) Sherrill prefers free incision over, and removal of the inflamed gland, applying **Iodoform Dressing.** Noble incises and evacuates the abscess cavity, washing it out with 1% **Nitrate of Silver Solution** driven in with some pressure, then evacuated and pressure bandages applied. The puncture, evacuation, and injection are repeated for two or three days.

BULBAR PARALYSIS. *Græme M. Hammond, M.D., New York.*

Infantile Amyotrophic Lateral Sclerosis of the Family Type.—Dr. Charles Henry Brown[1] reports a case of wide-spread nuclear involvement which is exceedingly interesting. The child was about eleven years old when first affected by an inability to whistle or talk plainly. The symptoms rapidly increased, so that in a week he could not

PLATE V.



move his tongue freely, or whistle, or swallow, without an effort. It was soon observed that he was unable to close his eyes, or laugh. His hearing became impaired, and on the least exertion he had difficulty in breathing. This was soon followed by the inability to unbutton or button his clothes, write, or carry as heavy weights as formerly.

As shown by the illustrations (*Plate V*) he appears to be exceedingly emaciated, more markedly so in the upper parts of his body. There is an inability to close the eyes, and there is a lack of facial expression. The atrophy of the tongue, and the extent of his ability to protrude it, and the "tapir" mouth, are well shown. Objectively, the boy presents, besides these symptoms, the inability to move the lips. All the front muscles of the neck are exceedingly emaciated, and the larynx feels like a set of freely movable cartilages. Articulation is barely intelligible; it is nasal, and without tone variation.

The laryngeal examination reveals a relaxed larynx and no muscular movement.

The posterior muscles of the neck are strong, and also the humeral scapular group, and the Erb symptom of this form of infantile spinal paralysis is not noted. The lad's intercostal muscles are all weak. Expansion of the chest, except by a great effort, barely exceeds half an inch. The breathing is very shallow. The digestive processes are somewhat weakened. He is pot-bellied, and a physical examination shows a dilated stomach. He passes large quantities of urine, and all the arm muscles are more or less paralysed and atrophied. His hand muscles are especially so. On volitional movement, there is a tendency to traction and tension of the flexors.

The leg muscles also are mostly more or less involved. The tension of the flexors is marked, and the gait resembles a combination of high knee action and spring halt. Careful examination also reveals fibrillary twitchings of the mouth and neck muscles, and exaggeration of many muscle reflexes.

There is a general arrested development. He is microcephalic, cries, and is amused by trifles. Vaso-motor symptoms are present. Face is always pale, and hands and feet are cold, damp, and mottled in hue.

This interesting case has its prototype in those described as progressive bulbar paralysis of the family type, viz., Hoffman (one case) in 1891, Remak (one case) in 1892,[2] Fazzio (one case) in 1893,[3] Bernhardt (three cases) in 1889,[4] and Foude (two cases in brothers) in 1893.[5]

These cases, when compared with the author's, will be found to bear striking resemblance as far as the beginning and involvement of the bulbar nuclei, more or less extensively, but differ, in most of them, by the non-extension of the disease, as it has in Brown's case, to the involvement of the motor nuclei of the cord and to the pyramidal tracts, and he considers that his case, as in amyotrophic lateral sclerosis, which stands related to progressive muscular atrophy, may be linked to nuclear disease of the bulb, yet in its phenomena deserves a separate classification.

REFERENCES. — [1] "Journ. Nerv. and Ment. Dis.," Nov. 1894; [2] "Deut. Zeit. für Nerven," p. 427, 1893; [3] "Arch. für Psychiat. und Nerven," 1892; [4] "Riform. Med.," Nov. 1892; [5] "Virchow's Archiv.," 1889.

BURNS. *Priestley Leech, M.D., F.R.C.S.*

TREATMENT.—Dissatisfaction with the results of burns, treated by the old methods, has led several observers to try new methods.

Madame Nougeotte Wilbouchewitsch[1], in a thesis, has demonstrated that for burns of the first four degrees, cicatrisation without suppuration is possible. In most cases anæsthesia is necessary to allow of a correct application of antiseptic principles to the treatment of burns. The region about the burn is cleaned by means of a soap and brush, alcohol, ether, and a fluid antiseptic. The burn itself is cleaned as follows: If of second degree with intact epidermis, wash with sterilised gauze and an antiseptic soap, and then with sublimate solution; the larger blisters are opened with a flamed needle, and then the dressing is applied; if blisters are ruptured, clip away the shreds of epidermis and wash with solution of boric acid in place of sublimate. In burns of the second degree, which are already infected, after the usual disinfection, isolate the unruptured blisters by a special dressing. In these cases, the first dressing may not disinfect the wound, but at the second or third dressing the suppuration almost ceases. In burns of third degree and beyond, the same treatment is pursued, except they require more disinfection. Moist and fatty applications have to be rejected. **Thiol, Ichthyol, Iodoform Gauze** give good results. The less the burns have suppurated, the less the deformity from cicatrices.

Professor Haas[2] recommends **Aristol** as a dressing for burns on account of its anæsthetic as well as its antiseptic action. The seat of the burn is washed with boracic lotion, the vesicles opened and the burnt area covered with aristol gauze, over which sterilised cotton, gutta-percha, and a bandage are applied. When the secretion has diminished, aristol can be dusted on or applied in a 10 per cent.

ointment. Aristol is not poisonous like iodoform, but is more expensive.

Dr. Grose[3] recommends lint soaked in warm **Carbolised Carron Oil,** covered with a thick envelope of cotton wool as the best application for the first week. Then dress the vast, beef-red, profusely suppurating wounds with **Gall Ointment,** or **Gall** and **Opium Ointment,** or **Boric Ointment,** with a drachm of finely powdered galls to the ounce ; thickly spread on strips of lint ; wrap in cotton wool, and bandage firmly. From a few cases of burns which I have seen dressed on antiseptic principles, as recommended by Madame Wilbouchewitsch, I should recommend a further trial of the method.

Ostoff[4] recommends the application of **Subnitrate of Bismuth,** made up into a paste with hot water and applied with a brush.

REFERENCES.—[1]" L'Union Médicale," 1894, abstracted by du Benchel ; quoted in " Quart. Med. Journ.," July, 1894 ; [2]" Practitioner," Feb., 1895 ; [3]" Lancet," March 23, 1895, p. 744 ; [4]" Deutsch. med. Wochensch.," 38, 1893.

Synopsis.—(Vol. 1895, pp. 21 and 153.) **Diaphtherin,** 1 or 2% solution, as a moist dressing. Unna advises: ℞ Lanolini, 10 parts; Adip. Benzoat., 20 parts; Aq. Calcis, 30 parts; M.

CALCULUS (Vesical). (See "Bladder, Diseases of.")

CANCER. *Priestley Leech, M.D., F.R.C.S.*

TREATMENT.—Lately several methods have been proposed for the treatment of malignant growths, which are either in a situation where operation cannot be undertaken, or which have come under the notice of the surgeon too late for operative procedures to give any hope of thorough removal. Among these, that by the injection of the **Toxins of Erysipelas** or of the **Toxins of Erysipelas** and **Bacillus Prodigiosus,** appears to have given results which appear worthy of consideration, although, as usual, in cases where a new remedy is proposed, there is a great amount of conflicting evidence.

Coley[1] publishes a further communication on the treatment of inoperable malignant growths by the mixed toxins of streptococcus erysipelatosus, and bacillus prodigiosus. At first he filtered the toxins, but he now proceeds in the following manner: Ordinary peptonised bouillon is put into small flasks (50 to 100 c.c. capacity). After sterilisation the bouillon is inoculated with the streptococci of erysipelas and allowed to grow for three weeks at a temperature of 30° to 35°C. The flasks are then inoculated with B. prodigiosus, and allowed to grow for another ten to twelve days at room temperature. At the end of this time, after being well shaken up, the cultures are poured into sterilised glass stoppered half-ounce bottles, and

heated to a temperature of 50° to 60°C. for an hour, sufficient to render them perfectly sterile. After cooling, a little powdered thymol is added as a preservative, and the toxins are ready for use. The toxins are much stronger when prepared in this manner than when filtered through a Pasteur, Chamberland, or Kitasato filter. If the preparation is too strong, it may be diluted with glycerine or sterilised water. The dose varies from 1 to 8 minims. He usually begins with the minimum dose. He has seen a temperature of 105°F. follow an injection of 2 minims. Up to May 31st, 1894, he treated with mixed toxins twenty-five cases of inoperable sarcoma, eight of inoperable carcinoma, and three of sarcoma or carcinoma. In cases of carcinoma, there was marked improvement, but no cures. In six of sarcoma, six months have passed without recurrence; another case of sarcoma of the hand is in perfect health two years from the beginning of the treatment. Since May 31st, 1894, he has treated twenty-four cases, thirteen were sarcoma, and eleven carcinoma. In the cases of carcinoma, a retarding influence was exerted by the injections, but in no case did the tumour entirely disappear. In the sarcoma cases the effect was more marked; in three out of thirteen cases the tumour has disappeared. The combined action of the two toxins is greater than either used alone. Johnson[2] reports a case of sarcoma of the palate with enlarged cervical glands successfully treated by the mixed toxins.

In Germany a hot controversy has raged around this question. Emmerich and Scholl[3] reported cases cured by **Erysipelas Serum** and Bruns[4] states in opposition to them that he has never seen cessation of growth in, nor lessening, nor disappearance of a malignant growth after use of erysipelas serum. Petersen[5] also joins in the controversy against Emmerich. Campanini[6] tried erysipelas toxins in two cases of sarcoma; no influence was exerted on the growth of the tumour, and dangerous symptoms of intoxication were produced by the strong injection. Fabre-Domergue[7], in a critical paper, believes there is no cure for the disease, and that the treatment has no theoretical foundation. Répin[8] advises further trial, although in four cases which he treated with it no benefit was obtained. Kopfstein[9] has tried the action of three different strengths of serum from sheep inoculated with erysipelas streptococci in fifteen cases of malignant disease. The injections gave rise to rigors, severe headache, pains, etc., with fever. He gives details of cases and histological examinations of the ulcer after sloughing out of the tumour, which showed that islets of apparently healthy granulations contained well formed cancer nests. He considers the action of the serum to be purely local, and holds out no prospect of cure from this treatment.

Kronacher[10] and Leon-Krynski[11] have tried the effects of injection of **Oil of Turpentine.** The former has not had time enough to watch his cases ; the latter tried it in two cases of mammary cancer with no benefit, and the treatment is very painful.

Bernardt[12] proposed interstitial injections of **Salicylic Acid** in inoperable cancers, and Tofius[13] has applied it in seven cases, with results which he considers far superior to any other method of inoperative treatment. The injections produce a rapid diminution in the amount of hæmorrhage, and sometimes its complete cessation, diminish the sloughing and pain, improve the general condition of the patient, and retard the progress of the disease. These results were obtained by the injection every four or five days, after careful antisepsis of 1 to 4 c.c. (15 minims to 1 drachm) of a 6 per cent. alcoholic solution of salicylic acid repeated seven to thirteen times.

REFERENCES.[1]" Med. Record," Jan. 19, 1895, quoted in " Pract.," April, 1895, and in " Therap. Gaz.," March 15, 1895 ; [2]" Therap. Gaz.," Jan. 15, 1895 ; [3]" Deut. med. Woch.," Nos. 17, 22, 24, 1895 ; [4]Ibid., Nos. 20 and 27, 1895 ; [5]Ibid., No. 20 ; [6]" Il Policlinico," July 1, 1895 ; Epitome, " Brit. Med. Journ.," Sep. 7, 1895 ; [7]" Presse Medicale," June 1, 1895 ; [8]" Rev. de Chirurgie," June, 1895 ; [9]" Wiener klin. Rundschau," Nos. 33 and 34, 1895, abstract in Epit., " Brit. Med. Journ.," Sep. 21, 1895, p. 45 ; [10]" Centralblatt für Chirurgie," No. 20, 1895 ; [11] Ibid., No. 30, 1895 ; [12]" Therap. Gaz.," May 15, 1895 ; [13] Ibid.

CANCER (Mammary). *Priestley Leech, M.D., F.R.C.S.*

A valuable addition has apparently been made to the operative procedures for removal of cancer of the breast. Halsted[1] claims by a new method of operating to have obtained results much better than those of previous surgeons. Billroth, by regional recurrence, designated a return of the cancer in or about the scar after a long time, explaining these cases on the basis of the cancer diathesis, but Halsted reserves this term for skin metastases at a greater or less distance from the scar.

For the principal growth, the axilla, the pectoral muscles, and the supra-clavicular region—in other words, for the scar in its fullest sense—we should hold ourselves responsible, but for the eradication of the so-called lenticular and apparently discrete metastases of the skin, we have no guide. These lenticular skin metastases or regionary recurrences, furthermore distinguish themselves from local recurrences, in that they are believed to have formed against the lymphatic current, and to have no connection either with the parent tumour or with each other. He says that the efficacy of an operation is measured more truly in terms of local recurrence than of ultimate cure.

He has made a table from the records of various surgeons to determine the percentage of local recurrences after operation for the cure of cancer of the breast. It is, shortly, as follows: Billroth, 85 per cent. of one hundred and seventy cases; Czerny, 62 per cent. of one hundred and two cases; Fischer, 75 per cent. of one hundred and forty-seven cases; Gussenbauer, 64 per cent. of one hundred and fifty-four cases; König, from 58 to 62 per cent. of one hundred and fifty-two cases; Küster, in 60 per cent. of two hundred and twenty-eight cases; Lücke, in 66 per cent. of one hundred and ten cases; Volkmann, in 59 per cent. of one hundred and thirty-one cases.

In this table he has been unable to make a distinction between true local recurrence and regionary recurrence.

Halsted has operated on fifty cases by this new method, and so far as local and regionary recurrence are concerned, the result is known in all but five cases. In thirty-four (73 per cent.) of these, there has never been a local or regionary recurrence. Twenty-four are living, and ten are dead. In forty-three of the forty-six cases (93 per cent.), there has been no true local recurrence. In other words, there has been a local recurrence in only three cases (6 per cent.). In every one of the fifty cases, some or all of the axillary glands were cancerous. In seventeen cases the highest infra-clavicular gland was involved.

Halsted's technique is as follows:—

(1,) The skin incision is carried at once and everywhere through the fat.

(2,) The triangular flap of skin *a*, *b*, *c*, (*Plate VI, Fig. A*) is reflected back to its base line, *c*, *a*. There is nothing but skin in this flap. The fat which lined it is dissected back to the lower edge of the pectoralis major muscle, where it is continuous with the fat of the axilla.

(3,) The costal insertions of the pectoralis major muscle are severed, and the muscle is split between its clavicular and costal portions as far as a point opposite the scalenus tubercle on the clavicle.

(4,) The clavicular portion of the pectoralis major muscle and the skin overlying it are cut through hard up to the clavicle. This cut exposes the apex of the axilla.

(5,) The loose tissue under the clavicular portion (the portion usually left behind) of the pectoralis major is carefully dissected from this muscle, as the latter is drawn upward by a broad sharp retractor. This tissue is rich in lymphatics, and is sometimes infiltrated with cancer (an important fact).

(6,) The splitting of the muscle is continued out to the humerus, and the part of the muscle to be removed is now cut through close to its humeral attachment.

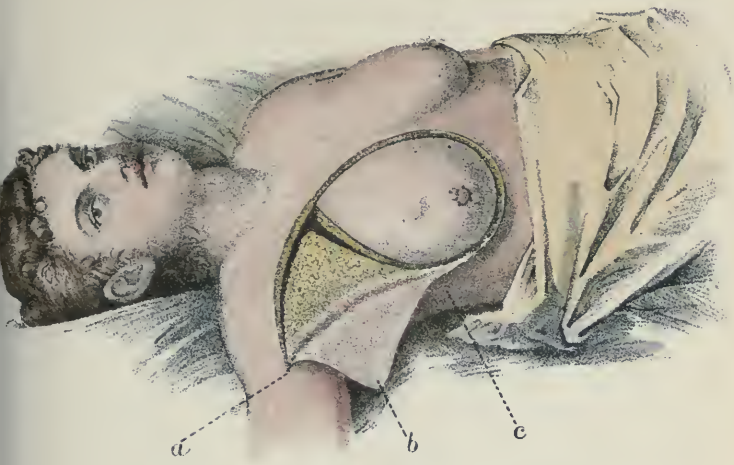


Fig. A.

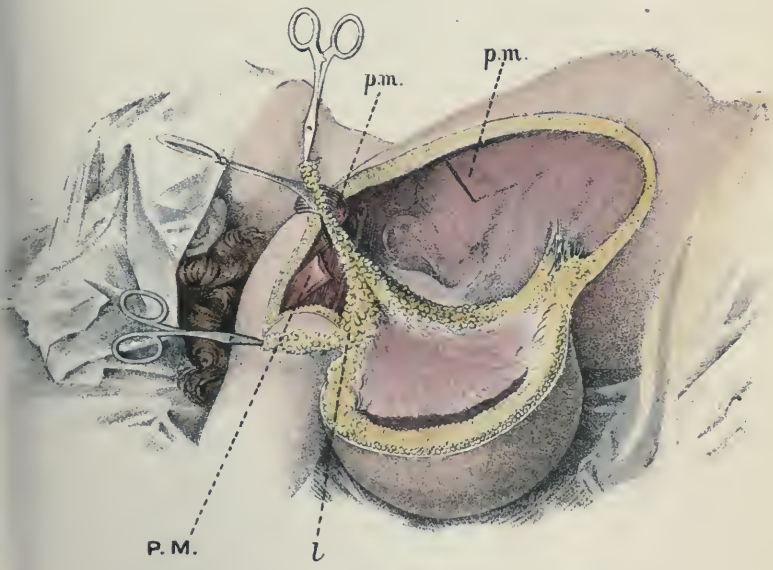


Fig. B.

Danielsson & Co., Chromo-lith., London.

(7,) The whole mass, skin, breast, areolar tissue, and fat, circumscribed by the original skin incision, is raised up with some force to put the submuscular fascia on the stretch as it is stripped from the thorax, close to the ribs and pectoralis minor muscle. Include the delicate sheath of the minor muscle, if practicable.

(8,) The lower outer border of the pectoralis minor muscle having been passed and clearly exposed, this muscle is divided at right angles to its fibres, and at a point a little below its middle.

(9,) The tissue rich in lymphatics and often cancerous over the minor muscle near its coracoid insertion is divided as far out as possible, and then reflected inwards in order to prepare for the upward reflection of this part of the minor muscle.

(10,) The upper outer portion of the minor muscle is drawn upward with a broad sharp retractor (*vide Fig. B*).

(11,) The small blood vessels (chiefly veins) under the minor muscle must be separated from the muscle with the greatest care. Dissect these vessels out very clean, and immediately tie close to the axillary vein. Forceps might fall off, or accidentally be pulled off.

(12,) Having exposed the subclavian vein at the highest possible subclavicular point, the contents of the axilla are dissected away with scrupulous care, also with the sharpest possible knife. The glands and fat should not be pulled out with the fingers, and the axillary vein should be stripped absolutely clean. Not a particle of extraneous tissue should be included in the ligatures which are applied to the branches, sometimes very minute, of the axillary vessels. In liberating the vein, push the vein away from the tissues, not push the tissues away from the vein. It is better to expose the artery, for sometimes, not usually, the tissue above the large vessels is infiltrated. It is best to err on the safe side, and to remove in all cases the loose tissue above the vessels and about the axillary plexus of nerves.

(13,) Having cleaned the vessels, we may proceed more rapidly to strip the axillary contents from the inner wall of the axilla—the lateral wall of the thorax. Grasp the mass to be removed with the left hand, pull it outwards and slightly upwards to put on the stretch the delicate fascia which still binds it to the chest. This fascia is cut away close to the ribs and serratus magnus muscle.

(14,) When the junction of the posterior and lateral walls of the axilla are reached, an assistant takes hold of the triangular flap of skin and draws it outwards to assist in spreading out the tissues, which lie on the subscapularis, teres major and latissimus dorsi muscles. The operator, having taken a different hold of the tumour, cleans from within outwards the posterior wall of the axilla. The

subscapular vessels become nicely exposed and caught before they are divided. The subscapular nerves may be left.

(15,) After having passed these nerves, the operator has only to turn the mass back into its original position and to sever its connection with the patient by a stroke of the knife from *a* to *c*. All is removed in one piece; there are no small pieces nor shreds of tissue. The edges of the wound are approximated by a buried purse string suture of strong silk. Of the triangular flap of skin, *a*, *b*, *c*, only the base is included in this suture. The rest of this flap is used as a lining for the fornix of the axilla. The apex of the flap is consequently shifted to a new and lower position. The axilla is never drained, and invariably heals by first intention. The uncovered wound often heals by so-called organisation of blood clot.

The operation, he says, should be practised on the cadaver. The disability produced by the operation is slight.

Meyer[2] describes what he calls an improved method for removing carcinoma of the breast, as follows:—

Usual skin incision, embracing a good piece of skin around the nipple; the incision is at once run up into the axillary cavity about two inches farther than in the usual operation. Additional skin incision from the clavicle at the junction of its middle and outer thirds downwards, meeting the first wound at right angles. Reflection backwards of the three skin flaps with as thin a layer of the underlying fat as possible, exposing insertion of pectoralis major muscle on the clavicle and sternum and on the humerus, the cephalic vein in Mohrenheim's subclavicular space, the border of the latissimus dorsi muscle.

Divide pectoralis major muscle at its tendon, close to the humerus, and preparation of the same downward to its insertion on the clavicle. Here it is cut off at once down to the sternal extremity of the bone, in order to thoroughly expose the contents of the axillary cavity and the infra and subclavicular region. Preparation and excision of the subclavicular, infraclavicular and axillary fat, glands and lymphatics, with the knife, beginning over the bundles of nerves and vessels high up in the cavity, and continuing this procedure from the lower border of the subclavian and axillary vein downwards. When freed, these are divided on the outer side from the fat in the upper part of the sulcus tricipitalis of the arm, and are raised and cut out from the outer side inwards. This means beginning from the border of the latissimus dorsi muscle. This is continued, including the fat on the subscapularis and teres major muscle, until the chest wall is plainly before us, and until the lower surface of the pectoralis major is reached.

Fat with glands and lymphatics are nowhere cut into, but remain in one piece and attached to the outer lower border of the pectoral muscles in their normal anatomical relation. Divide tendon of pectoralis minor muscle on the coracoid process. Gentle elevation of breast and muscles by an assistant, clamp and divide vessels which enter and leave the pectoralis major muscle. Amputation of major muscle at its insertion on the sternal extremity of the clavicle and of both muscles at their insertion on the ribs and sternum with the knife close to these bones. This insertion forms the pedicle of the whole mass, and when cut the extirpation of the cancer is finished. Drainage after surturing of wound. The large defect is covered with rubber tissue in order to favour rapid healing under a moist blood clot. Good compression.

REFERENCES.—[1] "Annals of Surgery," Nov., 1894 ; [2] "Med. Rec.," Dec., 15, 1894, quoted in "Therap. Gaz.," Feb. 15, 1895.

CANCER (of the Rectum).

Herbert William Allingham, F.R.C.S., Eng.

M. Schultz[1] has suggested the use of **Pyoktanin** in suppositories, the receipt being :—

℞ Pyoktanin	gr. 1	Ol. Theobrom.	q. s.
Pulv. Opii	gr. ½		

Very much has been written as to the relief of cancer of the rectum by colotomy, and as to its possible cure by the older methods of part or complete excision, or by Kraské's operation. Some surgeons are inclined to perform colotomy on almost all occasions, and others are as strong advocates of excision and Kraské s operation. The writer's own opinions will be found in his previous works on the subject.

Mr. F. T. Paul[2] has published a paper on his fourteen cases of excision, two of whom died under the operation, six died from recurrence of the growth, at an average period of one year and eight months, and the other six were still living for an average period of from three and a half to four years. It is especially in the class of ca es where extensive growths commence low down but their limits cannot be defined, that he recommends excision as against colotomy, even though it may be doubtful whether the entire growth can be eradicated.

Dr. Joseph Bacon[3] also discusses the question in his article on the "Sacral Method of Extirpation of the Rectum."

Two other American surgeons must be referred to, Dr. H. O. Walker.[4] who suggested a modified Kraské operation, which consisted

in the use of an enlarged Murphy's button, but so as to effect the end-to-end approximation of the gut, and Dr. H. O. Marcy[5], who subsequently performed an operation by that modified method.

Dr. Staus[6] has put in a plea for more frequent and earlier colotomy, and Dr. Matthews[7] has weighed the subject in a thorough manner.

REFERENCES.—[1]"La Med. Mod.," March 8, 1895; [2]"Brit. Med. Journ."; [3]"Mathews' Med. Quarterly," Jan., 1895; [4]Ibid., Jan., 1894, Oct., 1894; [5]Ibid., Jan., 1894; [6]Ibid., Jan., 1894; [7]Ibid., April, 1894.

CANCER (of the Skin). *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

Hartzell,[1] while admitting that excision should always be preferred, instances other methods, when the patient will not submit to the knife. Scraping is, he says, useless, unless caustics are applied afterwards. The thermo-cautery may sometimes be used, but he pins his faith on the chemical caustics. Of these he discards altogether the mild ones, the use of which has, he thinks, much to do with the disrepute into which this method of treatment has fallen. **Arsenic,** 1 to 8, **Chloride of Zinc,** 25 to 50 per cent. **Potash** with caution; and one of the very best applications he considers to be **Pyrogallol,** which is almost painless and very thorough.

Dr. Gavinno[2] applies **Fuming Nitric Acid,** 10 parts, and **Perchloride of Mercury,** 4 parts, which is made into a syrup by the addition of bibulous paper. He says the cicatrices are excellent.

Lassar has extended the use of his **Arsenic Treatment** to melanoma, and reports a case cured. [The use of arsenic internally in any malignant tumour is very much to be deprecated.—ED.]

Multiple carcinomatous growths are reported in a case of psoriasis, treated for thirty years with arsenic. There were eleven tumours, and only in one of them was there any connection with a psoriasis plaque.

Darier[3] reports a series of cases treated with **Methyl-blue** (1 to 20). When the tumour is deep seated it should be injected hypodermically. Grafting may be necessary. (See "Rodent Ulcer.") (See also "Phytolacca," p. 55.)

REFERENCES.—[1]"Therap. Gaz.," May, 1894; [2]"Mercredi Médical"; [3]"Universal Med. Journ.," Aug., 1894.

CANCER (of Stomach). (See "Stomach, Diseases of.")

CANCER (of the Uterus). *Theophilus Parvin, M.D., Philadelphia.*

Morcellement in Uterine Cancer.—Duret,[1] of Lille, gives these indications for morcellement in the removal of a cancerous uterus: (1,) Extreme fragility of the cervix, not permitting perfect seizure;

(2,) Enormous size of the intra-vaginal growth, so that the narrow vagina will not permit access to the *cul-de-sac* ; (3,) Excessive size of the uterus, either from hypertrophy, or the co-existence of myomata, so that the organ cannot be drawn down ; (4,) Pelvic adhesions so strong that the uterus is immobile.

The following are the methods of *morcellement* :—

(1,) *Incomplete morcellement*, and removal of the fundus and the uterine appendages in one piece. The cervix and tumour are divided vertically in the median line for some centimètres, and then fragments are cut away to the right and left of the section, usually alternately. If the uterine artery is cut, bleeding is arrested by the hæmostatic forceps. Frequently, as the fundus of the uterus is approached, it is found that it can be readily drawn down, or even rotated anteriorly or posteriorly. Then the operation is completed as an ordinary hysterectomy by ligating the broad ligaments at their upper third. In some cases the appendages may be drawn out and tied at the same time.

(2,) *Complete morcellement* by antero-posterior section of the neck and of the body, so that each half of these is successively removed with its corresponding appendages. Duret, for obvious reasons, prefers the antero-posterior section to the transverse. In general, it is better to remove alternately right and left a fragment of the tumour or of the cancerous uterus, for more room and light are thus given as the operation progresses. The vertical section is made from time to time, but as the upper third of the uterus is approached, the tissues may be divided by a single cut, and then each half may be drawn down, and turned forward or backward easily.

It has been objected to hysterectomy by morcellement in cancer, that it causes liability to infection. The objection is gratuitous, for the peritoneal *culs-de-sac* are not opened until the last, and their opening is preceded by washing out the uterus. When the serous cavity is opened, there remains only the fundus of the uterus, and this usually is not affected by cancerous degeneration.

The reporter remarks that there is hardly anything new or peculiar in Duret's method of operating. We cannot see, for example, that it materially differs from that of Péan, and of Segond. Certainly we saw many operations done last summer by Professor Landau, in which dividing the cervix first vertically, removing tissues by piecemeal, then carrying the vertical incision higher, again removing fragments of each side, and thus continuing until the fundus was divided by this method. Some of Landau's extirpations were for fibroids, and others for cancer. Hæmostasis was always made by compressing

forceps, a dozen of which probably would be required before the operation was completed; most of these forceps, if not all, were removed in twenty-four hours.

We yet need statistics, large and reliable, to determine whether vaginal extirpation of the uterus, for cancer, or other disease, can be best done by using ligatures, or hæmostatic forceps.

The Cautery in Vaginal Hysterectomy.—Dr. John Byrne[2] strongly advocates removal of the cancerous uterus by the **Galvano-Cautery.** He has long practised this method, and he asserts that recurrence of the disease is much less frequent than after other methods are used. He says: "This immunity from relapse, so often observed, can in no other way be explained than by attributing it to: (1,) The avoidance of operative or traumatic infection of exposed surfaces; and (2,) The destructive effects of the heat on outlying tissues and cells already, doubtless, in a transition stage of degeneration, and far beyond the line of excision."

The editor wishes to add that recurrences do take place in some cases after ordinary methods very rapidly. For example, he saw a case in the practice of one of the best operators in the world, in which the disease reappeared in three months, and he knows of another in which the woman died of cancer ten weeks after another great operator had successfully extirpated the uterus.

We need much larger statistics to determine the actual value of different ways of dealing with the cancerous uterus—value not only relative, but also absolute.

Let it be added that the galvano-cautery, in the use of which Dr. Byrne has long been an expert, is not the only cautery which has been used in removing the uterus, *e.g.*, Mackenrodt, of Berlin, and some others employ the thermo-cautery for this purpose.

Local Treatment of Cancer.—Jennings advises introducing daily into the cervical canal, in uterine cancer, a crayon composed of 25 centigrammes each of **Methylene-blue** and **Tannin,** 0·5 centigrammes of powdered **Opium,** 15 drops of **Olive Oil,** and 45 grammes of **Coca Butter,** the crayon being kept in place by a glycerine tampon.

Steam in Cases of Uterine Disease.—Pincus[3], of Dantzig, narrates a case of inoperable cancer, three of fungous endometritis, five of cervical endometritis, and one of puerperal putrid endometritis, satisfactorily treated by the use of the vapour of hot water. The steam was carried by a cannula, with return flow into the uterine cavity, the operation usually being preceded by dilatation of the cervical canal. The temperature of the steam is given as 100° C.

REFERENCES.—[1] "Revue Médico-Chirurg. des Maladies des Femmes"; [2] "Amer. Journ. of Obstetrics," No. 4, 1895; [3] "La Semaine Médicale."

CARBUNCLE. *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

Dr. Stoney[1] reports a case of carbuncle successfully treated with injections of **Biniodide of Mercury.**

REFERENCE.—[1] "Brit. Med. Journ.," May 4, 1895.

CATARACT. (See "Eye, Diseases of.")

CATARRH (Post-nasal).

Synopsis.—(Vol. 1895, p. 167.) The simple catarrh of naso-pharyngeal mucous membrane is sometimes benefited by cautious **Cauterization** of the posterior wall, if secretion is profuse. If tenacious or inspissated, **Ammonium Chloride Wash**, gr. v—℥j, is useful and often curative. Nasal douches and the post-nasal syringe should be avoided.

CEREBRAL HÆMORRHAGE.

Græme M. Hammond, M.D., New York.

Ingravescent Cerebral Hæmorrhage Treated by Ligature of the Common Carotid Artery.—Dr. F. Dercum[1] reports the case of a man, aged fifty, who first experienced slight weakness in the left arm on February 11th, at 8 a.m. The left leg became paralyzed the same evening. In spite of treatment, the symptoms were more marked the next morning. All that day he remained about the same; but the following morning there was a decided increase in the paralysis, which continued to progress until the evening of the next day, February 14th. By this time there was complete paralysis of the left arm, very decided paralysis of the left leg, and paralysis of the lower half of the left side of the face. There was no paralysis of sensation. There was a dull feeling in the head and slight giddiness, but no mental disturbance whatever. The arteries were somewhat atheromatous; urine of sp. gr. 1,018; no albumin. A diagnosis of ingravescent cerebral hæmorrhage was made, and ligation of the right common carotid artery was recommended. The patient having freely given his consent, the operation was performed by Dr. W. W. Keen, the same evening. Cocaine was used locally in place of a general anæsthetic.

The patient bore the operation well. Next morning it was evident that the progress of the paralysis had been arrested, his condition being the same as it was before the operation. The next day a very decided return of motor power was noticed in the affected limbs, and from this time on he continued to improve.

When seen two months later, there was a slight spastic condition of the limbs, and the deep reflexes were increased, but the patient had a good deal of muscular power. Dercum's diagnosis of the case was a progressive capsular hæmorrhage.

REFERENCE.—[1] "Journ. Nerv. and Ment. Dis.," Sept., 1894.

CEREBRAL TUMOURS. *Græme M. Hammond, M.D., New York.*

A tumour of the aqueduct of Sylvius is reported by Dr. Joseph Collins.[1] The particulars of a case of this rather rarely situated tumour, with the autopsy and pathological findings, are given. The analysis of the symptoms is very interesting. First there was a marked inco-ordination manifested by a reeling, staggering gait, due to distension of the aqueduct. This gait was a typical cerebellar gait, but might also result as the author showed from lesion of the corpora quadrigemina. In cases like his own, however, oculo-motor paralysis is apt to be associated with the inco-ordination, while, if the posterior quadrigemina are affected, defects in hearing are observed from slight up to complete deafness. Sub-normal temperature, circulatory sluggishness, and inhibition to a certain extent of the various functions of the centres along the floor of the cavity were also observed. The hebetude, headache, etc., the writer attributed to the plugging of the aqueduct and intraventricular accumulations.

Von Bergmann,[2] in an article on tumours of the brain, shows that only in 29 per cent. were operations practicable, and, in three-fourths of these, operations were impossible on account of the uncertainty of the diagnosis. The author commended the electric motor saw as presenting a rapid and extensive bone-removing instrument. He does not commend the surgical treatment of epilepsy. Extirpation of the epileptic area is only advocated where a distinct lesion, as a cyst, for example, is present.

He, however, claims that great success has been obtained in operations for abscesses of the brain, especially those associated with suppurative otitis media, and even in thrombosis of the sinuses.

Operations for the relief of intracranial pressure have not been of any permanent benefit. Quincke's operation of tapping the lumbar portion of the cord in basilar meningitis results in only temporary improvement, and the satisfaction of the bacteriological examination of the liquid withdrawn.

Dening[3] recommends making the lumbar puncture in cases of meningitis, and withdrawing the spinal fluid for bacteriological investigation. He details a case in which great numbers of tubercle bacilli were found with which successful inoculations were secured on guinea pigs.

REFERENCES.—[1] "Amer. Journ. Med. Sci.," Oct. 1895; [2] Report of the German Congress of Surgery, "Med. Week.," April 20, 1895; [3] "Certralblatt. für innere Medicin," March 6, 1895.

Synopsis.—(Vol. 1895, p. 488.) Horsley does not admit that gummata are affected by iodide of potash and specific treatment generally. In tuberculous disease **Arsenic, Cod-liver Oil**, etc., may be justifiable for even longer period than use of the iodide.

CHANCRE.

Synopsis—(Vol. 1895. pp. 34 and 167.) **Lawsonia Inermis** in the form of the powdered plant has recently been brought forward. Wielander's method is to apply pledgets of cotton wool soaked in warm water, then a layer of moist wool which encloses the penis, and over this a coil of lead tubing through which water at 41°C. is kept flowing; the dressing is changed three times a day, and in two days the ulcers were healthy, and usually healed rapidly under the action of **Dermatol**. Worster obtains great success by prolonged spraying with **Peroxide of Hydrogen** in full strength. projected against the chancre with a cylinder pressure of sixty-five pounds. Simple sprays of water often give remarkably good results in treating acute and chronic phlegmons, and also sprays of **Carbolic Acid Solution**. Hallopeau and Brodier conclude that **Di-iodoform** is applicable to those suppurations and ulcers which benefit under **Iodoform**.

CHOLERA.

Synopsis.—(Vol. 1895, p. 173.) For the hypodermic injection of **Salines** the formula is: ℞ Powdered Chloride of Sodium, 5 parts; Sulphate of Sodium, 10 parts; Water at 100° F., 100 parts. Of this solution 1 to 3 pints are injected at a time, and the procedure repeated three or four times a day. Moricourt calls attention to the use of **Sulphate of Copper** successfully adopted in 1866.

CHOREA. *Græme M. Hammond, M.D., New York.*

Moncorvo[1] writes encouragingly regarding the use of **Asaprol** in Sydenham's chorea. He especially cites a case where the chorea was one of the complications of malarial fever. The patient was a child of eleven years of age, rachitic, and affected with hereditary syphilis. The attack was worse on the right side and very severe, incapacitating the child from doing any ordinary purposive movements. He prescribed asaprol, giving 15 grains *per diem*, and increasing this gradually to 75 grains in three doses during the day, administered in sweetened water. The drug was well tolerated, the symptoms rapidly decreased in intensity, and a cure was effected in one month and nineteen days.

Dujardin-Beaumetz[2] ends his interesting article on chorea by the declaration that there is no specific treatment for this malady. In chorea of rheumatic origin, **Antipyrin** is serviceable in doses of 60 grains a day. In serious cases, antipyrin must be reinforced by **Chloral** in large quantities. Children, particularly, seem to bear

chloral exceedingly well. Bouchut, according to the author, has given from 45 to 75 grains to children in twenty-four hours.

Bromide of Potassium should be given in large doses, that is, from 30 to 60 grains a day. He recommends the following formula :—

℞ Bromide of Potass. ʒiv | Aquæ ʒlxvj
M. Sig.—2 to 4 teaspoonfuls a day in a little black coffee.

He also recommends hydrotherapy in the form of **Spinal Douches,** varying, according to the severity of the cases, from lukewarm douches in the beginning, to colder applications day by day as the patient improves. **Massage** and **Gymnastics** are also advocated. In cases accompanied by hysteria, **Bromides** in conjunction with hydrotherapy are recommended, but in the paralytic form of chorea the bromides should be avoided. The author does not recommend the use of hyoscyamine.

Congenital Chorea.—Johnston,[3] after carefully analyzing reported cases, and also some of his own, affirms that there is no hard and fast line to be drawn between movements of athetosis on the one hand and "congenital chorea" on the other, and he saw no reason not to classify these choreas under the head of athetosis, and considers them due to gross cerebral lesions.

REFERENCES.—[1]"Bull. Gen. de Therap.," March 15, 1894; "Revue des Mal. de l'Enfance," May, 1895; [2]"Bull. Gen. de Therap.", March 15, 1894; [3]"Amer. Journ. Med. Sciences," Oct., 1895.

CIRCUMCISION.

Synopsis.—(Vol. 1895, p. 175.) Gundrum removes the redundant foreskin, carefully stitching so that all raw surfaces are coaptated, and the parts being thoroughly cleansed with aseptic solution and dried. The following mixture is painted over the penis from meatus almost to the root: ℞ Resin, ʒij; Copal Varnish, ʒij; Beeswax, ʒj; Tallow, ʒij; Iodoform, ʒj. Heat to 150° or 175° Fh.; stir, mixing the iodoform thoroughly. Apply one coat, and allow it to harden, leaving the meatus free; then apply two more coats, and complete the dressing by wrapping one or two layers of aseptic gauze round the penis, and painting this over with a final application. Hagedorn slits the prepuce sufficiently to allow of retraction, then excises a circular strip, and stitches the mucosa and epidermis together, but a roll of gauze is placed on the wound before tying the sutures, which are then knotted over it, and the whole comes away as a hard ring in about a week's time.

CLUB FOOT. (See "Orthopædics.")

COLIC.

Synopsis.—(Vol. 1895, p. 11.) In renal colic Dr. Wm. Murray pushes Belladonna until slight delirium supervenes, *i.e.*, 30 or 40 drops of reliable tincture every two or three hours during the attack only, the patient being prepared with the necessary doses to begin immediately the attack commences.

CONJUNCTIVITIS (Diphtheritic). (See "Eye, Diseases of.")

CONSTIPATION.

Synopsis.—(Vol. 1895, pp. 48 and 176.) **Cathartic Acid** is recommended by Dr. Kral Dehio, of Dorpat, for obstinate constipation. He gives 2½ grs. for adults, and ⅛ gr. to children. In new-born children regular nursing is necessary, and a small rectal injection of warm water may be given, or a small suppository of **Coca Butter** may be inserted, or a few drops of **Glycerine** and **Water** injected. General **Massage** over the abdomen, with **Camphorated Oil**, is useful. In older children diet must be regulated, sweets avoided, and vegetables, *e.g.*, beans, prunes, etc., given. Injections or suppositories may be used daily. Before each meal a teaspoonful of the following syrup: ℞ Syr. Rhei., Syr. Gentian, āā ʒiv; or in the morning a teaspoonful of: ℞ Ol. Ricini, Syr. Aurant. Flor., āā ʒvj; M. Shake well. Or 1 to 3 teaspoonfuls of **Cascara Cordial** are still better. Slow eating and careful mastication are necessary, and as children grow older a teaspoonful of the following mixture may be given in the morning: ℞ Calcined Magnesia, Sulphur, Cream of Tartar, āā ʒvj; Oil of Anise, ♏15. The following may be given as rectal injection: ℞ Infusion of Senna Leaves, gr. 75 to gr. 150; Water, ʒiv to ʒviij. **Calomel** and **Scammony**, 4 to 6 grains of each in syrup or cachet, may be given twice a week for marked atony of the liver, or a pilule containing $\frac{1}{40}$ to $\frac{1}{50}$ gr. **Podophyllin** may be given before the evening meal. For defective intestinal secretion **Citrate of Magnesium** may be given once a week, or a wineglassful of a purgative mineral water. For inactivity of the intestine 8 to 12 drops of: ℞ Tinc. Nuc. Vom., ♏30; Tinc. Belladonn., Fl. Ext. Cascara Sag., āā ʒij. **Hydrotherapy, Exercise, Massage**, and **Electricity** with **Faradization** of the abdominal walls must be considered, also the use of the **Continuous Current**. Symptoms of obstruction should first be treated by a hot bath, copious irrigation of hot **Boric Acid** solution, to which is added 1 or 2 teaspoonfuls of **Glycerine**, and if the symptoms are not severe **Castor Oil**, ʒij to ʒvj, may be used; also liquid diet, chiefly milk flavoured with coffee. A good combination is **Cascara Sagrada** and **Asafœtida**. As a useful **Alkaline Aperient**: ℞ Sod. Bicarb., gr. 10; Pot. Bicarb., gr. 10; Ammon. Carb., gr. 2; Pulv. Rhei., gr. 4; Tinc. Zingib., ♏10; Aq. Menth. Pip. ad, ʒj; M. ft. mist. *Sig.*—ʒj t. i. d. s.

CONVULSIONS.

Synopsis.—(Vol. 1895, p. 178.) Simon advises emptying the digestive canal, and a **Warm Enema** should be given with **Oil, Glycerine**, or **Salt**. To calm the nervous system, inhalation of a few drops of **Ether** or **Chloroform**. After the enema acts give a clyster containing **Chloral** and **Musk** (8 grs. chloral to infant from three to six months, 11 grs. to one of nine months, and 15 grs. to child of one year, with 20 drops of tincture of musk), giving this in 3 or 4 parts to ensure retention. A mixture containing small doses of **Bromide of Potassium** and **Tincture of Musk** should be used every hour or half hour. In obstinate cases 1 to 3 **Mustard Baths** should be given, or a **Blister** to the back of the neck, left on for three hours. Burns, foreign bodies in nose or ear, hernia, undescended testicle, retention of urine, and especially uræmia, should be remembered as possible causes of convulsions, and if the last is suspected, **Counter-irritation** over kidneys, **Hot-air Baths, Leeches** to mastoid process, or **Venesection** may be required. Schumann has successfully employed **Massage** in cases arising from intestinal derangement.

CORNEA (Traumatic). (See "Eye, Diseases of.")

CORYZA.

Synopsis.—(Vol. 1895, pp. 51 and 179.) Valentin, of Berne, employs **Sulphanilic Acid**: ℞ Acidi Sulphanilici pur., 10 grms.; Sodii Bicarb., 8·0 grms.; Aq. dest., 200·0 grms.; M. ft. Sol. *Sig.*—40 to 80 grms. daily, either at once or in two doses. The nose may be washed three times daily by irrigation with infusion of **Eucalyptus Leaves**, or by hot water, to which is added a soupspoonful of 1 to 20 **Carbolic Lotion**. Every two hours, after blowing the nose, use a pinch of the following **Snuff**: ℞ Chlorhydrate of Cocaine, ·10; Menthol, ·20; Salicylic Acid, ·50; Boric Acid, 4; Powder of Marshmallow, 10; M. Make into a fine powder. If frontal pain is severe, take one of the following **Pills** three or four times daily: ℞ Crystal Nitrate of Aconitine, gr. $\frac{1}{100}$; Bromhydrate of Quinine, gr. 16; Liquorice Powder, q.s. Make 10 pills. When the skin is irritated around the nose apply; ℞ Vaseline, 10 parts; Ac. Boric, 1 part. Ft. Ung. The following snuffs are useful: ℞ Cocain. Hydrochlor., gr. $1\frac{1}{2}$; Menthol, gr. $2\frac{1}{2}$; Ac. Salicyl., gr. 8; Ac. Borac., ℥j; Pulv. Amyli, ℥jss; M. ft. pulv. A pinch every two hours, after blowing the nose. Or: ℞ Bismuth Salicylat., ℥ss; Camphor. Pulv., ℥j; Cocainæ Hydrochlorat., gr. $\frac{3}{4}$; M. ft. pulv. The juice of a ripe **Lemon** squeezed into the hand, and inhaled two or three times, is said to be a useful remedy.

CROUP.

Synopsis.—(Vol. 1895, p. 180.) Kohn prefers **Calomel**, giving a child under one-and-half years ·05 gramme of pure calomel hourly sleeping and waking, and for each year above two-and-half years add ·02 gramme calomel to the hourly dose. After 1 or 2 grammes are given a change should be noticed. Severe diarrhœa is rare, and should be treated by diminishing the calomel, or prolonging intervals, or a **Starch Injection**, with or without a little **Paregoric**, may be used. Dicky advises a warm, moist atmosphere, an emetic of **Turpeth Mineral**, repeated whenever the respiration is embarrassed; calomel to move bowels if confined; **Ice** to the throat, and pellets of ice to relieve thirst; **Quinine** pushed to cinchonism; a sufficient amount of **Hydrate of Chloral**, and **Belladonna** to allay bronchial spasm, *e.g.*, ℞ Chloral Hydrat., gr. j; Tinc. Belladonn., gtt. 5—10. *Sig.*—To be given every three hours until 4 or 5 doses are taken; inhalation of **Medicated Steam**. **Intubation** or **Tracheotomy** may be required. **Peroxide of Hydrogen**, **Lime Water** and **Soda Bicarb.** are mentioned as solvents of the membrane, but the most importance is attached to the **Hot Spray** which is used as the vehicle for these drugs.

CYSTITIS. (See also "Bladder, Diseases of.")

Theophilus Parvin, M.D., Philadelphia.

Acute Cystitis.—Lutand[1] states that the first indication is to relieve pain, and for this purpose he directs the following suppository:—

℞	Morphine Hydrochlor.	Extract of Belladonna	gr. $\frac{1}{12}$
	Cocaine Hydrochlor. āā gr. $\frac{1}{8}$	Ol. Theobrom.	grs. xlvj

This suppository is introduced every four hours, until the pain and tenesmus cease.

For the insomnia, the following rectal injection is advised:—

℞	Chloral Hydrate grs. lx	Water or Milk	f℥iv$\frac{1}{2}$
	The Yolk of an Egg		

The general treatment, hot fomentations, poultices, and sitz baths are recommended, as is also the introduction into the vagina, morning and evening, of the following tampon :—

℞ Camphorated Lanolin grs. 462 | Extract of Belladonna grs. 30

Chronic Cystitis.—When the pain and inflammation have subsided, an elastic or glass catheter, to which is attached a syringe, holding 100 to 150 grammes, is introduced into the bladder, and the following injected :—

℞	Boric Acid	ʒj¼	Distilled Water	Oi·76
	Biborate of Sodium	fʒj¼		

Of this solution, from 1 to 1½ ounces, according to the irritability of the bladder, are injected.

This is followed by the injection of 4¾ ounces of warm water, holding in solution the following mixture :—

℞	Powdered Iodoform grs. 462		Distilled Water	fʒv
	Glycerin	fʒj¼	Gum Tragacanth	grs. 4

If pus exists in the urine, the following prescription is advised :—

℞	Benzoic Acid	grs. 16	Boiled Water	fʒxxx
	Orange Flower Water	fʒjss	Sugar	ʒiij¼

Of this, a glassful is to be taken between meals.

REFERENCE.[1] "Journ. de Médecine de Paris," July 22, 1894.

DERMATITIS HERPETIFORMIS.

Synopsis.—(Vol. 1895, p. 184.) Rosenthal reported amelioration from **Antipyrin** internally; locally, **Tar Baths**, and such ointments as **Salicylic, Vaseline**, etc. Neuberger found **Arsenic** useful internally, together with the application of 80% **Salicylic Paste**, and particularly from rubbings with tar, carried out in warm baths. Lustgarten and Allen used **Pilocarpine** successfully. Unna uses **Ichthyol** internally and externally.

DIABETES INSIPIDUS.

Prof. R. Saundby, M.D., F.R.C.P.

I have published a case[1] of diabetes insipidus which died from uræmia, and at the post mortem examination the kidneys were sacculated, and almost all their normal tissue destroyed. For some time before death the daily urea excretion was very deficient. In this disease the rule is for the amount of urea to be in excess, and I have drawn attention to the importance of estimating the urea and the prognostic value of its diminution. Mr. W. F. Clark[2] has published a case treated by ingestion of **Supra-Renal Glands** (first the raw gland, then with tabloids), with the result that the amount of urine was diminished.

REFERENCES.—[1] "The Practitioner," 1895, vol. liv., p. 39; [2] "Brit. Med. Journ.," 1895, vol. i., p. 1086.

DIABETES MELLITUS. (See also "Digestion, Disorders of.")

Prof. R. Saundby, M.D., F.R.C.P.

Since it has been shown experimentally that complete destruction of the pancreas in dogs is followed by all the classical symptoms of diabetes, and a considerable amount of pathological data has afforded a basis for the doctrine that many cases of diabetes in man are pancreatic in origin, a new vista has been opened up, and it is now possible to regard diabetes, as in some cases, an infective if not a contagious disease. The idea of contagion, originally put forward by Letulle, has been supported by a remarkable array of cases, in which husband and wife have both fallen victims to this disease, but it was impossible to accept this notion so long as the old neurosis theory exclusively held the field. But if diabetes may be caused by atrophy of the pancreas, following pancreatitis, this inflammatory condition probably arises from infective causes, at least in some instances, and may follow acute specific diseases, in the same fashion as nephritis follows scarlatina, to quote a well known example. MM. Charrin and Carnot[1] have pointed out that glands may become infected by microbes ascending their excretory ducts, and have proved that diabetes may be caused in dogs by injecting infective material (bacillus coli, streptococci and bacillus pyocyaneus,) into the pancreatic duct. The intestine contains innumerable micro-organisms ready to infect any organ which loses its normal resisting power, and, in man this may arise when calculi are formed in the pancreas, or possibly in the course of one or more of the specific fevers. There have been recorded of late years quite a number of cases of diabetes following influenza, and it is possible that it is by some such means as are here suggested that this sequela arises.

In spite of the industry of a large number of investigators, the exact fashion in which destruction of the pancreas causes diabetes is still undetermined. The controversy wages between those who maintain that the liver is the gland which regulates the supply of sugar to the blood, and claim that diabetes is due to failure of this regulating function and consequent excessive supply, and those who deny this regulating function, and attribute diabetes to failure in the normal mechanism for the destruction of sugar. Lépine[2] holds that the pancreas secretes a glycolytic ferment, which normally destroys sugar, and if he could satisfy the world that this is the case he would settle the pathology of pancreatic diabetes, but so far he has not succeeded. Kaufmann[3] thinks the pancreas exercises an influence upon the liver, and that after its destruction the regulating function of the liver becomes disorganised. Von Noorden, whose article on diabetes in

the "Twentieth Century Practice of Medicine" deserves the careful attention of all practitioners, sides with those who regard diabetes as due to diminished destruction of sugar, but rejects Lépine's explanation, and localizes the defect in the tissues themselves. Kaufmann thinks he has satisfactorily disproved this, by showing that the proportion of sugar in arterial and venous blood remains the same in diabetic as in healthy dogs, but Von Noorden denies the accuracy of the methods in use for estimating the amount of sugar in the blood, and considers that no reliance can be placed upon them, while it is certain that the results obtained by different observers are most conflicting.

To pass on to more practical questions. Grube[4] has published three cases of diabetic pseudo-tabes, in which the pupil reflex to light was lost. It has hitherto been held that this symptom afforded a means of distinguishing diabetic neuritis simulating tabes from true tabes complicated by diabetes. He has also shown[5] that diabetics may suffer from gastric attacks closely resembling the gastric crises of tabes. The tendency among modern authorities on diabetes is decidedly towards modified diet. There is a general feeling that the very strict dietary is rarely followed, and is often harmful. Alcohol and fat may in part make up for the want of carbohydrate, but in many cases it is advisable to allow a certain amount of starchy food. At the same time this must be done under careful restrictions, and its effect upon the urine closely watched.

Grube[6] has recorded two cases of diabetes which were benefited by taking **Lime,** the improvement being shown in their general health, and not in any alteration in the urine. He recommends **Milk** on account of the large amount of lime it contains, and in my opinion 1½ pints of milk should always form part of the daily diet of a diabetic.

The value of **Lævulose** has been abundantly confirmed, and it has been shown that it may be taken safely in quantities not exceeding 1½ oz. daily.

West[7] has ventured to attempt to restore confidence in **Uranium Nitrate.** This drug was used twenty years ago and given up as a failure, but the dose then employed was small. West recommends 10 grains three times a day, and quotes some cases in support of his views. So far I have not been able, even with these doses, to record any good results, and as the drug is liable to cause gastric irritation, it should be given with caution.

Monin[8] recommends **Permanganate of Potash** and **Paraguayan Tea;** Solis Cohen[9] **Strontium Bromide,** in 30-grain doses three times

a day; and Piatkowski[10] **Benzosol**, 20 to 25 grains three times a day. The last drug is getting an extensive trial in Germany.

While drugs have on the whole been very disappointing in the treatment of diabetes, much good may be done by attention to general hygiene. When the patient is able, he should be encouraged to take daily exercise, though fatigue should be avoided.

Diabetics should, as far as possible, lead a life out of doors, and to attain this it may be desirable in some cases to recommend a change to a more genial climate. But even under unpromising climatic conditions these patients do better the more they are out of doors.

REFERENCES.—[1] "The Med. Week," 1894, pp. 259 and 532; [2] "Rev. de Méd.," 1894; [3] "The Med. Week," 1895, p. 73; [4] "Neurolog. Centrl.," 1895, No. 1; [5] "Münch. Med. Woch.," 1895, p. 186; [6] Ibid., No. 22; [7] "The Med. Week," 1895, p. 374; [8] "Le Progrès Med.," 1894, vol. i., p. 265; [9] "Internat. Clinics," vol. iv., series 3; [10] "Wien. Med. Woch.," 1892, No. 51.

Græme M. Hammond, M.D., New York.

Brewers' Yeast in Diabetes Mellitus.—M. E. Cassart[1] has given daily doses of **Yeast** (℥jss), at the principal meals, to three diabetics, with favourable results. He found it difficult to administer the remedy in hot weather on account of acetic and putrid fermentation. The first few days the drug causes much eructation of gas and fœtid diarrhœa; soon, however, tolerance of the remedy was established, and the patients quickly felt the good effects. Their general condition was restored, appetite returned, strength increased, their pains diminished, and their weight increased from three to eight pounds in fifteen days. The urine also showed improvement in the increase of urea and the marked diminution of the sugar, in one case falling from half an ounce to eighty-one grains to the pint. The remedy seemed to apply to all classes of diabetics. The author is unable to advance any opinion in regard to the manner of its action.

REFERENCE.—[1] "Presse Médicale," Aug. 24, 1895.

DIABETES (Pancreatic). (See also "Pancreatic Obstruction.")

Vaughan Harley, M.D., M.R.C.P.

The symptoms following the complete removal of the pancreas in animals are so similar to those which accompany diabetes in man that it will be well to describe them somewhat fully, as by remembering them we are able to make our diagnosis in the human subject.

The symptoms described by various observers, and which I have repeatedly had the opportunity of verifying, are due, first, to the stoppage of pancreatic secretion reaching the alimentary tract, and,

secondly, to some as yet unknown cause, leading to the appearance of sugar in the urine.

After complete removal of the pancreas in dogs, sugar appears in the urine in from six to twenty-four hours, and the maximum amount of sugar is generally reached in about forty-eight hours. In some cases it may take from five to seven days, and during this period it has a tendency to fluctuate. A well-fed dog excretes from 50 to 200 grammes of sugar in its urine per diem, while in dogs kept fasting during five or six days it is not at all uncommon to find only from 50 to 60 grammes excreted in their urine. The percentage of sugar is never very high, being usually from 1 to 3 per cent., although it may in rare cases be 10 or 12 per cent. ; and it is markedly influenced by diet. Hédon and Gley describe periods during which the sugar disappears from the urine without any apparent cause. I narrated the case of a rabbit, in which the pancreas had been destroyed by the thermo-cautery, where the sugar disappeared from the urine in spite of the gland having been entirely destroyed.[1]

The quantity of sugar in the urine is not at all constant, and if any inflammation, such as peritonitis, pneumonia, etc., sets in, sugar, as a rule, disappears from the urine. It is a common thing to notice in dogs one or two days before their death that the sugar disappeared from the urine ; and that this disappearance of the sugar from the urine almost invariably occurs before a dog becomes comatose. In fact, in cases where the sugar disappears from the urine and there is no inflammatory condition present to account for it, one may, as a rule, predict coma.

The quantity of nitrogen daily eliminated in the urine is always very large in proportion to the quantity of nitrogen taken in the diet. This is accompanied by a rapid wasting, and is explained by the breaking down of the tissue proteids. Acetone appears usually in the urine after a few days, and is, as a rule, accompanied by the appearance of aceto-acetic acid. Von Mering and Minkowski state that before death β-oxybutyric acid appears in the urine. This, as far as I can personally speak, only occurs in those cases in which coma is about to supervene.

Albumen is commonly present in the urine, but never in any large quantity, and is rarely accompanied with casts.

Sandmeyer states that bile pigment also sometimes occurs. This I have never found.

Polydipsia is a frequent symptom, but it is far from invariable. For even when the quantity of sugar in the urine is 2 or 3 per cent. no excessive thirst may be noticeable. In cases where polydipsia is

marked we have at the same time polyuria, but this also is not invariably the case.

Polyphagia is generally a marked symptom, and in spite of this the loss of flesh is very rapid. In some dogs, in the same way, as no polydipsia accompanies the glycosuria, there may be no excessive appetite.

The rapid emaciation is a very marked symptom, and although the animals may be feeding well, they often lose a third of their body weight in about ten days. Accompanying the rapid loss of flesh is very great muscular feebleness, so that the dogs become so weak that they can scarcely move about.

When we consider those diseases of the pancreas with and without diabetes *en masse*, we only find verified in the post-mortem room what experimental pathology has taught us to expect. Thus, in those cases only in which the pancreas is completely destroyed by disease do we find diabetes, and in all the cases where a small amount of normal pancreatic tissue still remains, as in the case of the dogs, no diabetes occurs. The only apparent contradictions to this are in those rare cases of necrosis or diffuse carcinoma of the pancreas. If, however, in these the explanation above given is not the right one, there still remains the fact, borne out by experiment, that dogs suffering from inflammatory diseases, or when marked wasting occurs, often have no glycosuria.

Symptoms.—The signs and symptoms of diabetes due to pancreatic disease in man present, in several respects, well marked differences from those usually manifested in the other forms of diabetes, the onset of the diabetes being marked by the suddenness with which the thirst, voracious appetite, and polyuria manifest themselves, in association with the presence of sugar in the urine. Moreover, it attacks usually persons under middle age.

Pancreatic diabetes differs still further from the ordinary forms of glycosuria, in the uninterrupted rapidity with which it marches on to a fatal termination. Nervous prostration and great muscular debility, accompanied by the rapid emaciation, being, as a rule, quickly followed by a comatose condition, which soon leads to a fatal end.

In addition to these all-important signs, we have marked changes in the fæces; even the casual observer will notice that they contain particles of undigested food, and on being freshly passed, float about in an oily fluid, which, on cooling, hardens into a dirty yellowish grease.[2] Chemical analysis shows that instead of the normal 2 to 3 grammes of nitrogen, they generally contain 5 to 20, or even more. That is to say, instead of only 5 to 8 per cent. of the nitrogen given with

the food being excreted in the fæces, 40 to 80 per cent. is eliminated. The quantity of fat found in them may be 100 or more grammes, according to the quantity given in the diet. So that the percentage of the fat taken with the diet, eliminated in the fæces, will be from 60 to 80 per cent., whereas in health only from 2 to 6 per cent. is so eliminated. The fæces also invariably have a most foul odour.[3]

With regard to the urine in pancreatic diabetic patients, the sugar is, as a rule, not very great, although it may reach as much as 7 per cent., or even more. It rapidly reaches its maximum, and remains near to it until shortly before death, when it entirely disappears. The nitrogen in the urine (the same as in the cases of dogs) is increased out of all proportion to the quantity of nitrogen taken in the food. This is, as in the case of dogs, accounted for by the rapid breaking down of the tissue proteids and the elimination of their nitrogen in the urine. Acetone is almost invariably found in the urine of these patients. In some cases aceto-acetic acid and even β-oxybutyric acid appears, and is almost invariably the sign of approaching coma.[4]

It is seen from the above description of the symptoms of pancreatic diabetes met with in man, that they tally almost entirely with those found in the case of dogs. In the same way as we found that, in dogs, thirst and voracious appetite are not always present, we find also in some rare cases in man throughout the illness, no marked polydipsia or polyphagia. In order to illustrate the above described general symptoms I will give two cases in which the post-mortems confirmed pancreatic lesion being the cause of the diabetes.

The first case came under my observation in September, 1890, through the kindness of Professor Heiberg and Professor Torup,[5] of Christiania.

Y.R., aged twenty-three, a medical student ; as a child enjoyed good health, although pale and of somewhat a scrofulous appearance. He was a diligent boy at school, and always held a good place in his class. On entering the University to study medicine he was not well developed, and seemed mentally languid, although he never complained of being ill, and was sufficiently strong to be accepted as a soldier for service in the summer of 1890. In June he found his duties as a recruit very trying, and after serving fourteen days he was discharged. In the middle of August he suffered from catarrhal tonsillitis, which weakened him very much. On the 26th of the same month he complained of being very languid, sleepless, and having headaches. At this time his great thirst and constant hunger led to the analysing of his urine, and sugar was discovered. He soon became drowsy and restless, constantly wanting to get out of bed ; but when out of it he

was unable, on account of his weak condition, to sit up for long. The quantity of urine passed was from 4 to 6 litres per diem, it contained 2 per cent. of sugar and acetone, and aceto-acetic acid. The urine was not analysed for β-oxybutyric acid. His tongue was very dry, and his breath had a distinct aromatic, apple-like odour. His weakness rapidly increased, and during the last few days of his life he was almost completely comatose. . Up to the last day he could always be roused from the state of stupor; he died quietly on the 6th of September, that is to say, eleven days after the diabetic state was discovered. Despite fatty degeneration of the kidneys, the pancreas alone was found markedly diseased: its head was entirely converted into a round mass about the size of a duck's head, while all that remained of the tail of the pancreas was merely a thin flat fibrous band. Within the head of the organ was found a cavity the size of a cherry, filled with semi-purulent fluid. The surrounding substance was found, microscopically, to be made up of numerous small abscesses. The connective tissue was greatly increased, and what few gland cells were left showed marked fatty degeneration.

In this case it is known that the diabetes probably was only of short duration; at any rate he had no sugar in his urine in June of the same year, when he passed his army medical examination.

The next case is one recorded by George F. Duffy[6].

A farm labourer, aged twenty-four, but looking older, six feet in height and well made, stated he had always enjoyed the best of health until about five weeks before his admission to the City of Dublin Hospital, on the 18th October, 1883. The first symptoms he noticed were polyphagia, polydipsia, polyuria, and emaciation. After about a fortnight he began to feel languid and weak; he did not sleep well, and found he had lost a stone in weight. On admission he presented the usual symptoms of advanced diabetes mellitus. He seemed remarkably apathetic, and rarely spoke except in answer to questions. He preferred staying in bed to getting up, and stated he did so because he got so easily tired. During his stay in hospital he passed from five to six litres of urine in the twenty-four hours, which had a specific gravity of 1040 to 1045. The quantity of sugar is not stated. The urine gave the reaction of aceto-acetic acid, and acetone was also present. For ten days he remained in much the same state until, without evident cause, his bowels, which had been constipated, became exceedingly loose, and vomiting occurred; he then complained of pain in the epigastrium, and the abdomen was tender on pressure. The diarrhœa persisted for a week, the stools were somewhat of a dysenteric character, being very frequent, in small quantity, of a jelly-

like consistence, and extremely fœtid. For the first two or three days they contained white masses resembling lumps of undigested fat, but this disappeared on giving him peptonised milk.

He had now completely lost his voracious appetite, but was even more thirsty than on admission. The debility and emaciation increased. On the evening of the 3rd of November his temperature, which had previously been normal, rose to 100°F.; but subsequently his extremities became very cold and his pulse so weak that it was almost imperceptible. He then sank into a state of coma, or, more correctly speaking, collapse, and died on the morning of November 6. At the *post-mortem* the liver and nervous system showed no cause for diarrhœa, the pancreas showed no gland tissue, but merely a mass of connective tissue with trabeculæ; between the masses were groups of large irregular nucleated cells, appearing often like lymphoid tissue, and they seemed to be of a carcinomatous nature.

It is seen in these two cases, both of which were verified as pancreatic in origin by the autopsy, that the same series of symptoms occurred as are met with in the case of dogs after the removal of the pancreas.

If we look through the literature on the subject we find other cases recorded, both in England, Germany, and France, which resemble them in every respect; and that the different types found in animals have been also found in man. This is most valuable, showing as it does the utility of experimental pathology, for until we had the knowledge obtained by experimenting on animals, in which the entire pancreas had been removed, the significance of disease of the pancreas as a factor in causing diabetes was not thoroughly appreciated. Fortunately, we are now not only able to form a correct diagnosis of this serious form of diabetes, but, what is of equal moment, able to give a definite prognosis, for, of all the forms of diabetes at present known, none appear to be so speedily fatal as that owing its origin to pancreas disease.

On one point I wish to lay emphasis, viz., that experimental pathologists do not regard all cases of diabetes mellitus as pancreatic on the one hand, and that disease of the pancreas even may be present and yet no diabetes occur, so long as a portion of gland tissue remains capable of carrying on its function in a comparatively normal manner.

REFERENCES.—[1] Vaughan Harley, "Journal of Anatomy and Physiology," vol. xx., 1891; [2] George Harley, "Diseases of the Liver and Pancreas," Walton-Maberley, 1863; [3] Vaughan Harley, "Metabolism in obstruction of pancreatic duct," Trans. Path. Soc., 1895; [4] For fuller account of this coma, see Vaughan Harley, "Brit.

Med. Journ.," Sept. 23, 1893; [5] Vaughan Harley, "Brit. Med. Journ.," 1892; [6]" On the connection of acute diabetes with the disease of the pancreas," Trans. Acad. Med., Ire., vol. ii.,p. 405, 1884.

DIARRHŒA. *Henry Dwight Chapin, M.D., New York.*

Dr. Ssokolow[1] advises the use of high intestinal injections in children, and has made an anatomical study of the intestines to determine to what extent the ileo-cæcal valve offers an obstacle to the passage of an injected fluid from the cæcum to the ileum.

Among two hundred subjects experimented upon, one hundred and thirty being under one year, it was found that the ileo-cæcal valve was competent in only twenty-seven cases (20·8 per cent.), while in one hundred and three (79·2 per cent.) water passed freely through the valve into the small intestine. In older children, from one to twelve years, insufficiency was not so common, since out of seventy cases thirty-seven had incompetency. A pressure of more than 3 metres was dangerous, being liable to rupture the gut or disorganize the valve. It is, therefore, evident from this study that in children under one year, fluid may be expected to reach the small intestine in three-fourths, and in older children in one half of the cases. Therefore, in every suitable case an effort should be made to reach the small intestine with the irrigating fluid. Besides the numerous morbid conditions admitting of this treatment (dyspepsia, koprostasis, enterocolitis, cholera infantum, dysentery, etc.), the possibility of intestinal feeding, as Muselli has suggested, must not be overlooked.

Dr. Fischer[2] advises **Beta-naphthol Bismuth** as an intestinal antiseptic in the bowel troubles of children. A child one year old, can be given 5 grains of beta-naphthol bismuth every two, three, or four hours, as required; a child of six months, one half the dose. The powders are best given with a little boiled (sterilized) water, and preferably when the stomach is quite free from food. If there is a great tendency to vomiting and the child does vomit the first or second dose given, another dose of the same quantity may be immediately given.

Dr. Saint Philippe[3] advises the use of **Antipyrin** in the diarrhœa of nursing children. He recommends the following formula for administering the antipyrin :—

℞ Antipyrin	0·5 gm. (7½ grn.)	Water	50 gm. (13 fl. ʒ)
Syr. Orange Peel	50 gm. (10 fl. ʒ		

Sig.—Teaspoonful every two hours.

This dose may be doubled for children over one year old.

Antipyrin is especially indicated, it is maintained, in gastric and intestinal disturbances, accompanied by slight fever, and in diarrhœa occurring during dentition, or during the menstrual periods of the wet-nurse.

Dr. Blech[4] advises intestinal irrigation and stomach washing in the treatment of cholera infantum. For the latter he uses **Hydrozone** in the proportion of a tablespoonful to the pint of water; for the former purpose he uses cold water, adding about two ounces of hydrozone to the quart. Vomiting usually ceases after the first washing, but this procedure may be repeated if necessary. Irrigation of the bowel can be repeated every two hours. Among the other drugs only two are to be employed—morphine and strychnine—to be given hypodermically. No antipyretics should be given; if the fever is very high, and is not reduced by the intestinal irrigation, the whole body should be washed with alcohol.

Dr. Jules Para[5] treats cholera infantum by large doses of **Water**, after having cleansed the digestive tract of the poisonous substances which it contains. Plain water is not suitable, nor is an acidulated solution. A feebly alkalized and sparkling water, like that of Soultzmatt or Vals, has proved most acceptable. At first small doses are given, frequently repeated, as long as thirst is evident; and in this way, in a few hours, a quarter, half, or even an entire litre may be taken.

Dr. Gehlig[6] reaches the following conclusions in connection with indicanuria and digestive disturbances:—

(1,) Nurslings in good health or children fed upon sterilized milk, and not the subjects of digestive troubles, sometimes present a trace of indican in the urine.

(2,) If digestive disturbances occur, almost always some indican is found, its quantity varying with the gravity of the affection. In chronic catarrh of the intestine, cholera, and typhoid fever, it is particularly marked.

(3,) In older children without digestive trouble the urine normally contains indican. If the diet includes a high proportion of nitrogenous food (eggs, meat), indican becomes more abundant.

(4,) There exists no relation between tuberculosis and a more or less marked indicanuria.

References.—[1] "Jahrb. f. Kinderh.," Bd. xxxviii., S. 186; [2] "Med. Record," July 13, 1895; [3] "Wien. Med. Presse," xxxvi., 1895; [4] "New York Med. Journ.," Mar. 2, 1895; [5] "Rev. mens. de Mal. de l'Enf.," Sept., 1894; [6] "Jahrb. f. Kinderh.," Bd. xxxviii., 1894.

DIGESTION (Disorders of). (See also "Stomach, Disorders of.")

W. Soltau Fenwick, M.D., M.R.C.P.

PHYSIOLOGY.—Binet[1] gives the following results of his experiments upon animals with reference to the elimination of various substances by the stomach after their subcutaneous administration. Alkaline bromides and iodides pass rapidly into the stomach, and continue to be excreted in this manner for several days. The chlorides, on the other hand, only appear in the gastric contents when given in large doses. Hypodermic or intravenous injection of tartar emetic is not followed by the appearance of the drug in the stomach; lithium and magnesium are eliminated in small quantities, but strontium not at all. Organic bodies, such as salicylic and gallic acids, guaiacol, antipyrin and chloral, cannot be detected, but certain others show slight traces of their presence. The alkaloids—morphine, quinine, strychnine and atropine—pass into the stomach in small proportions. With non-fatal doses of morphine repeated lavage of the stomach does not modify the intoxication to any marked degree.

The digestion of farinaceous foods by infants has been the subject of a series of experiments by Heubner.[2] This observer found that in twenty-seven out of twenty-eight children less than nine days' old the salivary secretion exhibited diastatic properties. In one case ptyalin was detected in the saliva within the first twenty-four hours of birth. The pancreatic secretion in children less than three weeks' old had no action upon starch. The author cites some experiments by Jacobi, who administered starchy foods to children instead of milk, and afterwards submitted the fæces to a chemical examination, in order to determine the relative amount of sugar and undigested starch which they contained. An analysis of the excreta of a child seven weeks' old, who had received 30 grammes of rice flour in twenty-five hours, proved an entire absence of unaltered starch; while another child completely digested as much as 40 grammes of starch in eighteen hours. It would appear from these facts that the digestion of farinaceous food in early life is more complete than was formerly supposed.

Max Einhorn[3] describes an instrument which he has invented to record, in a graphic manner, the movements of the stomach. It consists of a small platinum globe, in the centre of which is fixed a smaller ball provided with spokes. Lying loose in the cavity of the outer shell is a small platinum marble. Both the platinum globe and the central ball are connected with insulated wires, which are inserted into an indiarubber stomach tube, and their free ends connected with a battery and a recording apparatus. The tube

is inserted into the stomach in the ordinary manner. Every movement of the organ causes the platinum marble to roll about among the spokes of the central cylinder, and thus to cause a series of makes and breaks of the electric current, each of which is registered in a graphic manner. By means of this instrument, which he terms a Gastrograph, Einhorn considers that valuable indications concerning the motorial functions of the stomach can be obtained.

Hemmeter[4] prefers to employ a soft tube, to the end of which is fastened a thin, distensible indiarubber bag. When the tube has been introduced into the stomach air is pumped into it so as to inflate the bag, and the apparatus is connected with a tambour and recording drum. The contractions of the stomach are thus easily registered.

CHEMISTRY.—According to Boas[5] the reaction described by Ueffelmann for the detection of lactic acid is open to several objections, since glucose, alcohol, oxalic and citric acids produce a similar colouration of the test solution, while the presence of hydrochloric acid or phosphates in the contents of the stomach tends to obscure the reaction. He therefore proposes to employ a method for the detection and quantitative estimation of lactic acid, which depends upon the fact that when a solution of the acid in question is heated with oxidizing agents, aldehyde is liberated. The latter is easily recognized by means of an ammoniacal solution of silver, which deposits a metallic precipitate in the presence of aldehyde.

The formation of sulphuretted hydrogen in the stomach is the subject of an interesting article by Zawadski[6] who, after giving the details of four cases of this description which had come under his notice, sums up his opinions on the subject, as follows: In pronounced gastroectasis the stagnant albuminoids undergo putrefactive changes in spite of a high degree of acidity of the contents. This happens, however, only after prolonged retention of the food in the stomach; even after twenty-four hours' retention no sulphuretted hydrogen may occur in such a patient. Even large quantities of putrefactive products cause little or no injury to the general condition, the cause of this self-preserving power being unknown. Writing upon the same subject, Boas[7] points out that the presence of H_2S in the stomach contents chiefly occurs in functional disorders of the stomach, being almost unknown in cases of cancer. There exists a strong antagonism between the production of the gas and lactic acid fermentation, since these two products of food decomposition are never found in the stomach at the same time.

DIAGNOSIS.—Kaufmann[8] has described a new variety of the bacillus lactis, which he encountered in the gastric contents in nineteen out of

twenty cases of cancer of the stomach. The same micro-organism only existed in three out of sixty-eight other cases of gastric disease. The bacillus varies in length from 6 to 8 μ., and in acid agar exhibits a characteristic growth. It is non-motile, and possesses the property of exciting fermentation in various food-stuffs with the production of lactic acid.

Martius and Lüttke having demonstrated that bread often contains lactic acid, Boas[5] has substituted an oatmeal soup for the test meal previously recommended by Ewald. After many experiments he finds that under normal conditions no lactic acid can be detected in the stomach after the use of the soup, and that the organic acid is also absent in cases of fibroid contraction of the pylorus, atonic dyspepsia, and chronic gastritis. When, however, the stomach is attacked by cancer, lactic acid is always present in large amount. He, therefore, considers this fact of considerable importance in the diagnosis of malignant disease.

Strauss[9] has investigated one hundred cases of disordered digestion with reference to the production of lactic and butyric acids, and concludes that while functional diseases of the stomach are seldom associated with the presence of lactic acid, the vast majority of cases of gastric cancer exhibit an excess of this acid after a test meal.

AUTO-INTOXICATION.—*Gastro-intestinal Infection.*—Bosc[10] describes two cases of an infective disease of intestinal origin. The chief symptoms consist of an irregular form of pyrexia of sudden onset, and lasting from five to six weeks. The whole surface of the body becomes covered with erythema multiforme, which is afterwards followed by severe desquamation. There are no local symptoms, but at a late stage violent vomiting is apt to supervene, accompanied by constipation, epistaxis, enlargement of the liver and spleen, albuminuria, and myocarditis. Death results from coma. From the blood and other tissues a bacillus can be isolated, which possesses the morphological appearances of the coli communi, but does not coagulate milk or produce fermentation of lactose. The injection of pure cultures of this micro-organism into rabbits gives rise to pyrexia and an erythematous eruption.

Singer[11] states that there exists a group of dermatoses which originate from decomposition of the chyme. In six cases of acute or chronic urticaria he found that the secretion of hydrochloric acid by the stomach was in abeyance. The administration of this mineral acid by the mouth effected a rapid cure of the skin disease. The author thinks that many cases of acne and senile pruritus, which resist ordinary treatment, will yield at once to intestinal antiseptics.

Tetany of Gastric Origin. — Soltau Fenwick[12] relates two cases of this rare complication of dilatation of the stomach which have come under his immediate notice. In the first case the patient was a man thirty-four years of age, who had suffered for six months from pain after food and vomiting. After an unusually severe attack of emesis he was suddenly seized with a tonic spasm of the muscles of the extremities, associated with retention of urine and cyanosis of the face. The temperature was normal, and the urine contained a trace of sugar and albumin. The stomach presented signs of considerable dilatation. The tetaniform condition persisted for four days, and disappeared as suddenly as it had commenced. The disease recurred on six subsequent occasions within the space of four weeks, death ensuing from respiratory failure during the seventh attack. Post mortem examination demonstrated the presence of a cicatrizing ulcer near the pyloric orifice. The second case occurred in the person of a man forty-six years of age, who had suffered from ulceration of the stomach for more than four years. The first attack of tetany followed a violent fit of emesis, and lasted two hours. The seizure was repeated several times, but finally ceased after **Lavage** of the dilated stomach had been instituted. In all about twenty-six cases of the disease are on record, and in no less than 92 per cent. a chronic ulcer existed near pyloric orifice. The nervous symptoms are of three kinds— tetany, tetanus, and epileptiform convulsions. Of these, the first named is the one most usually encountered, the other two being merely complications of the tetaniform condition. All varieties of the disease are extremely fatal, no fewer than 70 per cent. having terminated in death. In all probability an organic poison is manufactured in the dilated stomach which, by its absorption into the general circulation, acts upon the central nervous system as a convulsant. The appropriate treatment for the disease is to empty the stomach, and to maintain it in a state of comparative asepticity by means of daily lavage.

NEUROSES.—*Enteralgia.*—Potain[13] draws attention to the clinical features of neuralgia of the intestine, and contrasts them with those pertaining to gastralgia and other nervous affections of the abdominal viscera. The disease is most common in England and Russia, and appears to be intimately associated with the neuropathic and arthritic diatheses. It is characterized by sudden and severe attacks of pain, which come on at irregular intervals, and chiefly affect the upper part of the abdomen and the umbilical region. Occasionally the pain radiates in all directions, and then closely simulates biliary or hepatic colic. Actual syncope sometimes occurs from the intensity of the

suffering. If the crisis is prolonged vomiting ensues, and may even become fæcal in character. The appetite remains good and fever is entirely absent. During an attack the abdomen is often distended, and the stools are passed frequently and with tenesmus. The motions are hard and appear attenuated, as though subjected to considerable compression. After the crisis, they rapidly recover their normal characters. Enteralgia is more common in men than women, and its onset is excited by mental or physical overstrain. The treatment must be carried out on general principles, of which the due regulation of the bowels forms an important item.

In an article on the gastric neuroses of childhood Snow[14] describes an interesting case of *Intermittent Hyperacidity* commencing in an infant nineteen months old; each attack was ushered in by a convulsion, and was characterized by severe vomiting at intervals of two or three hours. The ejecta consisted of a sour fluid containing an excess of hydrochloric acid. The disorder recurred every few weeks, and usually lasted for about five days. On one occasion hæmatemesis occurred. The abdomen was always retracted but not painful to pressure, the pulse was quickened and irregular, and the temperature of the body elevated two or three degrees. The only treatment which afforded relief was the rectal administration of **Chloral** and **Bromide of Potassium.**

Another neuropathic disorder of the digestive organs in childhood has been described by Soltau Fenwick,[15] under the title of the *Dyspepsia of Strumous Children.* The complaint is more common in girls than boys, and appears to be intimately connected with the tubercular diathesis. It usually begins at the age of five, and is characterized by recurrent attacks of pain in the abdomen. The pain arises from a spasmodic contraction of the colon, and is readily excited by the ingestion of hot food, or by mental and physical fatigue. In the vast majority of the cases the child exhibits an intense dislike to fat, and in many instances saccharine substances also disagree. As a rule the bowels are constipated, but occasionally lienteric diarrhœa is a well-marked feature of the case. The pain is sometimes so violent as to cause faintness or even syncope. The most appropriate treatment consists in the regulation of the bowels by means of **Cascara** and **Maltine,** and the administration of small doses of **Iron** combined with **Belladonna.**

Gastro-intestinal Neurasthenia, occurring in adult life, forms the subject of an interesting contribution by Leonard Weber.[16] According to this author the disease frequently arises in a reflex manner from chronic irritation in such organs as the liver, kidney, and uterus.

It is also a common result of tape-worms. Men are more liable to the complaint than women, especially between the ages of twenty and thirty. When pain is a prominent symptom, the extract of **Cannabis Indica** in doses of $\frac{1}{8}$ of a grain proves a valuable remedy. Mircoli[17] describes a variety of dyspepsia, which is due to the displacement of the xiphoid cartilage. Shoemakers who exhibit marked xiphoid depression are frequent sufferers from this form of gastric disorder; and many anæmic girls are rapidly cured of their dyspeptic symptoms when attention is directed to the adjustment of the displaced cartilage. The treatment consists of daily **Massage** to the lower part of the sternum, followed by the application of a pad and bandage.

Dyspepsia dependent upon Disease of other Organs.—Phthisis.—In a recently published monograph upon the dyspepsia of phthisis, Soltau Fenwick[18] recognizes three distinct varieties of gastric derangement associated with tubercular disease of the lung. The first form is apt to *precede* the development of the pulmonary complaint for a considerable time, and either partakes of the nature of an "atonic" or "irritable" variety of dyspepsia. Both are characterized by anæmia, loss of flesh, and intense dislike to meat fat; but the gastric symptoms of the atonic cases chiefly consists of epigastric discomfort after meals, with flatulence, nausea, and constipation; while those of the irritable form comprise acidity, and severe vomiting during the process of digestion. Both varieties may give rise to rapid emaciation, and even terminate fatally from exhaustion. The phthisis commences insidiously, and is prone to run a protracted course in the atonic variety, but is usually rapidly progressive in those cases which have long suffered from the irritable form of the dyspepsia.

In about 70 per cent. of all cases of tubercular disease of the lungs symptoms of disordered digestion accompany the onset of the pulmonary complaint. Women are more often affected than men, and usually suffer from flatulence and vomiting, while men are more prone to acidity and epigastric pain Dislike to fat is one of the earliest symptoms, and in a large proportion of the cases saccharine substances are found to give rise to indigestion. Vomiting is almost always a prominent symptom, and occurs either in the early morning, or as the result of the ingestion of food. In the former case the emesis results from an attack of coughing, which has for its object the expulsion of the sticky mucus that has accumulated during the night in the bronchial tubes. The best treatment for this variety of vomiting consists in the administration of **Demulcent Drinks,** weak tea, or some slight refreshment before the patient gets up; but in obstinate cases a teaspoonful of **Codeia Jelly,** or a dose of **Linctus** is

necessary, in order to ward off an attack. The second variety of vomiting occurs immediately after the mid-day or evening meal, and owes its origin to a reflex cough, which is set up by the irritation of the pharynx or the mucous membrane of the stomach. This form of emesis often exerts a serious effect upon the general health, and is best combated by **Painting the Throat** with a 5 per cent. solution of **Cocaine** before the meal, or by the administration of sedatives. In neurotic girls the **Passage of a Bougie** will often prove of value when all other means have failed.

During the final stage of phthisis, when cavities have formed within the lung, gastro-enteritis is apt to arise, and to produce after a time cirrhosis of the digestive tract. Under these conditions vomiting occurs after food, the ejecta consisting principally of undigested food and mucus, while the secretion of hydrochloric acid undergoes a steady diminution and finally disappears altogether. **Bismuth,** in large doses along with **Chalk, Opium,** or **Calcined Magnesia,** helps to relieve the vomiting and diarrhœa.

Diabetes. — Grube [19] describes a form of gastro-intestinal crises occurring in the subjects of diabetes. Violent pain in the epigastrium is experienced in the early morning, followed by flatulence, eructations, nausea and sometimes by cramps in the calves of the legs. Vomiting occasionally ensues at the end of an attack. The temperature is slightly elevated, the mouth dry, and the pulse accelerated. The paroxysm endures several hours or even days, and is accompanied by great prostration. These crises though not in themselves dangerous to life, usually betoken the approach of the end, and probably owe their origin to the action of toxines in the blood upon the pneumogastric nerves. The appropriate treatment consists in the administration of **Purgative Enemata** and the use of **Hot Compresses** for the relief of the pain. If symptoms of maldigestion are present, the **Alcoholic Extract of Pancreas** may be administered with advantage.

Treatment.—Considerable attention has been devoted to the action of the **Bicarbonate of Sodium** upon the secretions of the stomach. Linossier and Lemoine[20] arrive at the following conclusions as the result of their elaborate experiments with the drug upon various animals: (1,) Sodic bicarbonate excites the gastric secretion; (2,) When the dose is small the increase of the gastric secretion is slight and variable; with a medium dose the increase is often considerable; (3,) With a small dose the secretion of hydrochloric acid reaches its maximum within two hours; with a medium dose in three, and with a large dose in four hours; (4), The administration of the

salt at the beginning of a meal appears to arrest the secretion of pepsin; (5,) The drug should always be given one hour before the meal.

Dujardin-Beaumetz[21] writing upon the value of the bicarbonate in cases of dyspepsia, lays down the following rules: (1,) In cases of subacidity the drug should be administered one to one and a half hours after the meal; while in hyperacidity it must be given either during the meal or two to four hours after it; (2,) In cases of atonic dyspepsia, where there is a tendency to stasis of the food and dilatation of the stomach, the drug should be given during the meal or one hour later; (3), The most useful natural alkaline waters are those which contain the greatest amount of bicarbonate of sodium.

Reichmann[22] has investigated the action of the drug, by causing it to be administered to healthy persons at various periods in the process of digestion, and afterwards aspirating the contents of the stomach. The results of these experiments upon the human subject are at variance with the foregoing. They are shortly as follows: (1,) When bicarbonate of sodium, dissolved in water, is introduced into the fasting stomach, it exerts no effect upon the gastric secretion; (2,) When a meal follows the administration of the salt, the gastric secretion is not affected one way or the other; (3,) When the alkali is given after the food, the acidity of the gastric juice is diminished in proportion to the amount taken; (4,) Continuous administration of the drug in these several ways exerts no effect upon the functions of the stomach; (5,) Long continued use of the salt exerts a tonic action upon a weak gastric mucous membrane.

The value of **Subnitrate of Bismuth,** in irritable affections of the stomach, forms the subject of an interesting paper by Matthes.[23] This writer has convinced himself by experiment that the first effect of the introduction of the drug into the stomach is to produce an excessive secretion of mucus. The movements of the organ subsequently tend to distribute the powder over the whole of its inner surface. Large doses of the drug (ʒj to ʒij) are recommended to be administered in a tumblerful of water in the early morning before breakfast.

According to Fleiner[24] the mucous membrane of the stomach can be completely dusted over with bismuth in a very simple and effective manner. The organ is first washed out with a dilute solution of carbonate of sodium in order to free it from excess of mucus, and then 4 drachms of the subnitrate, suspended in 12 ounces of water, are introduced into the stomach through a soft tube. Ten minutes are allowed for the salt to settle upon the surface of the organ, and the supernatant fluid is then siphoned off. The results

of this method of administering the drug are said to be highly satisfactory.

Alimentation.—Bovet[25] refers to the apparent connection between richness in albumin, or the nitrogenous elements of plants, and the organic phosphorus, these two seeming to run parallel. In the *Leguminosæ* they are found in the greatest proportion. One consequence of the association of phosphates with albumin, and the "diffusibility" of phosphoric acid, is that food of this character (leguminous) is very readily dissolved and digested in the alimentary canal, even in the absence of the usual ferments. The presence of a relatively large amount of potash salts in this food is also noted. In the laboratory of Professor Hayem a dog was fed for thirteen days exclusively on a leguminous diet free from salt. The result was a loss of weight amounting to one-tenth of the body-weight. An analysis of the gastric juice at the beginning and end of the experiment showed a marked increase in the two most important values, viz., the hydrochloric acid and chlorine. This may be interpreted as increased digestive power. A similar experiment upon a man suffering from chronic gastritis and slight dilatation of the stomach showed results comparable to the former. At the beginning the gastric juice was free from hydrochloric acid ; at the end of two months the acid was present in the normal amount. Digestion, which was previously slow and painful, no longer gave rise to inconvenience. The author therefore considers that leguminous food is suitable and valuable in similar cases of digestive disorder.

Singer asserts that **Rectal Feeding** is not sufficiently made use of. After referring to the rapidity with which absorption occurs from the rectum, the author[26] laments that rectal feeding is not more extensively employed in diseases of the digestive organs. He strongly recommends a nutritive injection equal in volume to 6 ounces, and consisting of 3 ounces of milk, the yolks of 2 eggs, with a small amount of peptone and sugar. The enema should be introduced high up into the bowel and repeated three or four times a day. If symptoms of intestinal irritation are present, a few drops of laudanum may be added to each injection.

Gastric Douches.—In an interesting review of the modern methods of treatment in diseases of the stomach, Rosenheim[27] lays stress upon the value of the gastric douche. He recommends that the tube should be provided with a large number of minute perforations through which water can be forced at high pressure. By this means the greater part of the inner surface of the stomach is exposed to a kind of needle bath. The douche should be employed only when the

organ is empty, and the operation may be repeated six or seven times at a sitting. It proves of the greatest service in cases of uncomplicated atony. **Warm Water Douches** are extremely valuable in nervous dyspepsia, chronic gastric catarrh, gastralgia, and hypersecretion. Disturbances of sensation are relieved by **Chloroform Water** (50 grammes in a litre of water, shaken, and decanted), or carbonic acid. Hyperacidity requires a douche containing 1 in 1000 **Nitrate of Silver**; while subacidity is readily cured by the application of warm douches, containing 1 teaspoonful of **Common Salt** to the litre.

Benedict[28] advocates the employment of **Menthol Vapour** to the inner surface of the stomach. The organ is first thoroughly cleansed and emptied, the operation being most advantageously undertaken in the early morning. A soft tube is then inserted, and a 2½ per cent. solution of menthol in liquid albolen is pumped into the stomach by means of an atomiser. In this manner the organ becomes distended with the vapour. The author has found this method of treatment of great value in cases of gastric fermentation, as well as in painful affections of the stomach, atonic dyspepsia and chronic catarrh. The menthol appears to exert an antiseptic and anæsthetic influence when administered in this manner.

Massage and Electricity. — Owing to the position of the stomach beneath the left hypochondrium, **Massage** of the empty organ is both difficult and unsatisfactory. Cseri[29] therefore proposes to massage the "full stomach." This is most easily performed about two hours after a meal. The operator sits on the left side of the patient and with the left hand manipulates the epigastrium in a direction from left to right, while with the other hand he pursues the opposite direction along the line of the lesser curvature. The treatment is performed every day, and lasts from five to eight minutes. The author believes that, properly applied, massage strengthens the muscular power of the stomach and prevents the tendency to dilatation, while it increases the determination of blood to the mucous membrane, and thus directly augments the activity of the gastric secretion. It also causes the expulsion of gas from the cavity of the stomach and so relieves the pain which accompanies mechanical stretching of its walls. He has treated more than a hundred cases of dyspepsia in this manner with the most excellent results.

Brock[30] records the results of his observations upon the value of **Electricity** in cases of nervous dyspepsia. Twenty-four instances of this disease were treated with direct galvanism of the stomach, the negative pole of Einhorn's instrument being introduced into the

organ while the positive pole was applied over the lumbar spine. The strength of the current was about 20 milliampères. After the treatment had been continued for some months, it was found that two cases were cured, six were somewhat improved, while the remaining sixteen had derived no benefit whatever. Electricity cannot therefore be regarded as a very valuable remedy in neuropathic affections of the digestive organs.

Mineral Waters.—Spitzer[31] has investigated a series of gastric diseases before and after a course of **Carlsbad Water.** The results of his researches are to prove that the mineral water increases the motor power of the stomach, and also the secretion of pepsin, but checks an excessive elimination of hydrochloric acid. In cases of nervous dyspepsia the water sometimes exerts a deleterious effect.

Artificial Digestives.—Oswald[32] has investigated the action of **Papain**, and finds that in cases where the secretory functions of the stomach are deficient the substance exerts a beneficial effect upon the process of digestion. It possesses the property of digesting albumin in a neutral or alkaline medium, and consequently continues to exert its specific action after its entrance into the intestine. The most convenient dose is from 4 to 7 grains three times a day after meals. Hirsch,[33] on the other hand, finds papain very disappointing in its action. This observer states that it only digests the more soluble varieties of albumin, and hardly produces any alteration in the other forms of proteid. He considers it chiefly of value in those cases where only combined hydrochloric acid is found after the test meal.

Lascar[34] strongly advocates the employment of **Takamine's Diastase** in cases of dyspepsia and infantile atrophy arising from deficient assimilation of the food. The artificial digestive in question is a dry, tasteless and inodorous powder, which is capable of exerting its specific action even in the presence of a minute quantity of a mineral acid. According to this author's experiments the taka diastase is capable of converting more than one hundred times its own weight of starch into a soluble form within the short space of five minutes. At the end of that time no trace of unaltered starch can be detected, either by the microscope or by the iodine test. The ultimate products consist of maltose with a small quantity of dextrin. These results compare very favourably with those obtained with other varieties of diastase, since the ordinary extracts of malt require at least twenty minutes for the conversion of their own weight of starch into sugar. The dose of taka diastase is 1 to 5 grains.

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DIPHTHERIA. *Henry Dwight Chapin, M.D., New York.*

Drs. Biggs, Park, and Beebe[1] have made a valuable report on bacteriological investigations and diagnosis of diphtheria. They come to the following conclusions :—

(1,) All inflammation of the mucous membrane due to the diphtheria bacillus of Löffler should be included under the name "diphtheria," and in this report they have been so included. An acute hyperæmia of the mucous membrane caused by the Löffler bacilli is considered as truly diphtheria as an inflammation with pseudo-membrane or exudate, and a case in which the lesions are confined to the larynx or bronchi as truly diphtheria as one in which the tonsils and pharynx are involved.

(2,) Under pseudo-diphtheria should be included all inflammations of the mucous membranes, which simulate true diphtheria, and which are due to streptococci, or, more rarely, other cocci.

(3,) The name croup or membranous croup should be regarded as a term merely indicating that the location of the pseudo-membranous or exudative lesion is in the larynx, and not as describing the nature of the disease, whether diphtheritic or pseudo-diphtheritic. In New York city, at the present time, 80 per cent. of the cases of "croup" are diphtheria.

(4,) The examination of cultures made upon solidified blood serum, form a reliable method of determining whether the diphtheria bacillus is present or absent in a throat. For diagnostic purposes, cultures should be made before the pseudo-membrane or exudate begins to disappear.

(5,) Virulent diphtheria bacilli were apparently in about 1 per cent. of the healthy throats in New York city at the time of these

examinations. Diphtheria, however, was rather prevalent in the city at this time. Most of the persons in whose throats they exist have been in direct contact with cases of diphtheria. Very many of those whose throats contain the virulent bacilli never develop diphtheria. We must therefore conclude that the members of a household in which a case of diphtheria exists should be regarded as sources of danger, unless cultures from their throats show the absence of diphtheria bacilli.

(6,) The bacilli found in the original serum cultures, which in appearance and staining are identical with the typical Löffler diphtheria bacillus, may be regarded, for diagnostic purposes, as virulent diphtheria bacilli, if the cultures have been made either from throats containing exudate or from those of persons who have been in contact with true diphtheria, for investigation has shown that over 95 per cent. of such bacilli are virulent.

(7,) All bacilli which are identical with the virulent Löffler diphtheria bacillus, morphologically, biologically, and in staining by reagents, should be classed with the diphtheria bacilli, whether they have much, little, or no virulence when tested in guinea-pigs. Bacilli which have entirely lost their virulence rarely, if ever, regain it. They probably are incapable of causing diphtheria, for in twenty-four cases in which they were found, there never developed any lesions, nor were they the origin of any case of diphtheria, so far as could be ascertained.

(8,) The name pseudo-diphtheria bacillus should be regarded as applying to those bacilli found in the throat which, though resembling diphtheria bacilli in many respects, yet differ constantly from them. These bacilli are rather short, and are more uniform in size and shape than the Löffler bacillus. They stain, as a rule, equally throughout with the alkaline methyl-blue solution, and produce alkali in their growth in bouillon. They are found in about 1 per cent. of the healthy throats in New York city, and seem to have no connection with diphtheria. They are never virulent.

(9,) One or more varieties, both of streptococci and other forms of cocci, exist in the great majority, and possibly in all of the healthy throats in New York city. Cultures from the throats in cases of pseudo-diphtheria contain more cocci, especially more streptococci, than those from healthy throats, but otherwise do not seem to differ.

(10,) The investigations of the Health Department have given striking evidence of the marked difference in mortality between true and pseudo-diphtheria, for while it was 27 per cent. in diphtheria, it was under 2 per cent. in pseudo-diphtheria.

(11,) The combined clinical and bacteriological investigation of over five thousand cases has demonstrated clearly the fact that many of the less characteristic cases of diphtheria and pseudo-diphtheria are so similar in appearance, symptoms and duration, that it is impossible to separate them, except by bacteriological examinations. In the more severe cases, and after the disease has fully developed, cultures are less necessary, although their systematic use is desirable.

(12,) Persons who have suffered from diphtheria should be kept isolated until cultures prove the bacilli have disappeared from the throat, for not only are the bacilli which persist in the throat virulent, but they are not infrequently the cause of diphtheria in others. Where cultures cannot be made, isolation should be continued for at least three weeks after the disappearance of the membrane, for experience has shown that it is not unusual for the bacilli to persist this length of time.

(13,) In pharyngeal cases in which thorough irrigation of the nostrils and throat with 1 to 4000 bichloride of mercury solution has been practised every few hours, the bacilli have not remained in the throat for as long a time after the complete disappearance of the pseudo-membrane as when no antiseptic has been employed. Other cleansing and antiseptic solutions are also useful.

(14,) Inflammations of the mucous membranes due to streptococci, either alone or associated with other cocci, are usually mild in character. These inflammations may be more serious when the lesions are located in the larynx, or when they are complicated by scarlet fever or measles.

(15,) While the streptococci and perhaps other forms of cocci may be considered as the primary etiological factor in pseudo-diphtheria, yet, in the majority of cases at least, certain predisposing factors, such as exposure to cold or other deleterious influences, or the presence of certain infectious diseases, appear to be of great importance in determining the occurrence of the disease. The streptococci which under these conditions apparently cause the disease, are probably those which had for a long time existed in the throat, and not those freshly derived through communication with other cases of pseudo-diphtheria.

(16,) The slight mortality and the usual mildness of the cases of pseudo-diphtheria do not warrant us in enforcing isolation, even if further investigation produced positive proof that this disease is directly communicable.

Dr. J. Mount Bleyer[2] has employed the subcutaneous injection of **Nuclein** in the different grades of diphtheria. As soon as a patient shows any sign of the disease, he should receive an injection of 20

minims of nuclein ; then for three successive days the injections can be given in doses of 25 minims every four hours. In pseudo-diphtheria, only three injections are necessary, of 15 to 20 minims each. He considers that the benefits of antitoxin are due to the nuclein contained in the serum.

Dr. Benesch[3] has treated eighteen cases of diphtheria with injections of a 2 per cent. solution of **Chlorhydrate of Pilocarpine.** The doses were ½ a cubic centimètre for children, and 1 cubic centimètre for adults. Recovery occurred in all cases, some of which were grave.

Dr. F. Kastorsky[4] uses **Menthol** in diphtheria. He reports thirty-seven cases of diphtheria (in three adults and thirty-four children) treated and cured by painting with a 10 per cent. alcoholic solution of menthol. The paintings (by means of a piece of cotton wool) were usually carried out three times daily. In some cases, however, a single free application was followed by complete disappearance of false membranes within two days. A marked improvement in the patient's general condition was invariably noticed from the beginning of the treatment.

Dr. J. H. Fruitnight[5] advises the treatment of diphtheritic croup by **Calomel Sublimation.** He employs from 5 to 20 grains, varying from one-half to two or three hours, according to the urgency of the symptoms. The patient is kept in the vapour-saturated atmosphere for a period varying from ten minutes to half-an-hour.

Dr. Morrison[6] advises feeding by the stomach tube after intubation. He reports twenty-eight cases of intubation, of which number twelve recovered. He holds that we have, in feeding by the stomach-tube after intubation, and in all other cases where there is interference with the act of deglutition, a method which is easy of application, which permits a definite amount of food to be placed in the stomach, thus fortifying the system against combined exhaustion and septic infection, which obviates both the discomfort and pain produced by the futile attempts at swallowing, and which will also prevent the dangers of deglutition, *i.e.*, pneumonia or suffocation.

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Antitoxin Treatment of Diphtheria.

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The exigencies of space make it impossible to discuss the present position of the antitoxin treatment of diphtheria at all fully. Yet the

very wide adoption of this agent enables one to draw some useful lessons as to its utility, which are of practical value and serve to guide us; nevertheless, while this new departure in therapeutics is still in its infancy, it behoves us to speak with some caution and reserve, and until a more intimate knowledge and wider experience permits our arriving at definite conclusions, it will be well to preserve an open mind on many aspects of the subject. Thus, no apology will be needed if I record simple facts, and refer to the researches of various observers, rather than endeavour to formulate definite statements, or give my own views, which could at best be but tentative.

What is Antitoxin?—Armand Ruffer[1] says that to talk of an albumose as the true poison in antitoxin serum is somewhat premature, as it is much weaker than the true poison. He thinks that those albumoses, which are formed in the broth of the culture, are only contaminated with the poison, and not the poison itself. Up till recently one sowed the poison in an albuminous fluid, and finding the poison develop, thought it was due to the decomposition of the albumen. This, however, is a mistake, for it has been shown (in France, Germany, and in his own laboratory) that it is possible to get a good supply of the chemical poison by growing the bacillus in a mere saline fluid. One must suppose, then, that the albumose is formed by constructive changes, and not by destruction of the albumen.

Now I (W. W.) incline to the opinion that the fact that the antitoxin must act by modifying the condition of the cellular elements of certain tissues, stimulating them to resist the action of the toxin, points strongly in the direction of limiting the dose which may be given with advantage. Otherwise the excessive action of the remedy would probably result in over-stimulation and exhaustion, or partial destruction of the tissues. Although tuberculin is in no way analogous to sero-therapy, it probably acts in a similar manner, and acting on this hypothesis I uttered a warning ("Med. Annual", 1891) against adopting Koch's excessive dosage, which produced such an excessive and destructive action on the tissues affected with tubercle, and I think subsequent experience has shown that the smaller doses have been attended with better results.

How does the Antitoxin act?—Armand Ruffer[2] further states that when Behring first read his paper he imagined then, and many imagine still, that the "antitoxin" must act towards the toxin in a manner similar to that by which a certain quantity of acid could neutralise a certain quantity of alkali. If that were so, then we should expect that it would be true for the whole scale. Ten times as much sulphuric acid would neutralise ten times as much alkali, but it is not

so with toxin and antitoxin. If one part of toxin is neutralised by one part of antitoxin, ten parts of toxin require, not ten, but only two parts of antitoxin. Thus, it is not a simple chemical equation. Again, if ten guinea pigs are taken, and each given a dose of toxin, with the same quantity of antitoxin to each, it will not be found that ten are saved; eight or nine will be, but the other will be lost. It is thus evident that there must be another factor, and that is probably to be found in the cells of the body. Another way of showing this is by injecting under the skin of an animal a certain quantity of toxin and antitoxin. No symptoms might supervene, and it might be said that the toxin had been neutralised. This is not so, however, for if the injection be made into a vein, and not under the skin, the animal will die of diphtheria just as if nothing had been done to protect it. The cells of the body must thus have some influence in curing the animal. It might be asked, What are the cells which are likely to have this function? Though it may only be a tentative opinion, Dr. Ruffer is inclined to think that they must include not only the white cells of the blood, but also the whole of the cells of the mesoblast. The same results are obtained from the toxin as from the diphtheria bacilli. Now it is known that the leucocytes can fight the bacilli, and under the membranes we find degenerated bacilli inside leucocytes. The leucocytes will probably do the same to the toxin. In this connection he recalled the fact that if a soluble salt of iron be injected, after a time it is not found in the blood as a whole, but in the cells which are phagocytes, or in the large cells lining the vessels in the liver. These latter take up, then, this salt of iron and alter it, and it is found in them after death. Probably some similar action takes place in the case of toxin. Another organ which has to do with the separation of toxin is the kidney. The urine of a child suffering from diphtheria, or recovering from that disease, if injected into an animal, leads to its having diphtheritic paralysis. Further, to show that antitoxin does not act in the way of neutralising, and that there must be some other factor, there is the fact that when a guinea pig died after inoculation with toxin, its blood was found to contain antitoxin, which had the power of preventing toxin from affecting another animal. The dead animal's body was loaded with antitoxin, and yet it died, and so it is in fatal cases in man. The action of antitoxin in respect to toxin cannot, therefore, be of the nature of a chemical reaction, but is a reaction produced through the cells of the body. An interesting note is furnished by Dr. Gibson [3] in a paper on the anatomical lesions found in animals which have died during the process of immunization. Taking one of the cases as a type of all, he said that the heart had appeared on

gross examination to be normal; the right lung had contained a thrombus; the abdominal cavity and peritoneum had been normal; the spleen had been softened and congested; the liver and pancreas had been normal; the cortices of the kidneys had been streaked with yellowish-white bands. The lymph nodes had been diseased in all the animals. A most minute examination had been made of the tissues of this animal, with the result of showing the central nervous system normal; the heart muscle very fatty; thrombi of the usual structure in the pulmonary veins; the spleen converted into a mass of blood cells and pigment; the liver excessively active; the lymph nodules enormously enlarged: and the kidneys showing acute degeneration. From this investigation he was disposed to think that antitoxin was largely a secretion of the liver cells.

We must bear in mind that the antitoxic serums in the market vary in strength, that of any given sample being indicated either: (1,) By the amount required to neutralise a given quantity of normal toxin (the German method), thus, No. 1 can neutralise 600 times its weight of normal toxin, No. 2, 1,000, and No. 3, 1,500 (No. 3 equals French 1 in 100,000); or (2,) By its power of counteracting a unit of toxin of definite strength, viz., of such a strength that 0·1 cc. kills a 500 gramme animal (guinea pig) within forty-eight hours. A 1 in 50,000 antitoxin counteracts 50,000 times its weight of animal inoculated with a fatal unit of toxin.

What is the "Physiological Action" of the Antitoxin?—Allen Thomas,[4] assisted by Mapes, has recorded careful observations made on one hundred and ten cases in the Nursery and Child's Hospital, New York, where forty-six cases of diphtheria, with Klebs-Löffler bacilli identified in each (Löffleria*), were in the hospital at the time of immunizing, these cases being on the increase. The one hundred and thirty-six non-diphtheric children immunized were inoculated with antitoxin thus :—

Age.	Number.	Antitoxin units.
3 to 4 weeks	7	50
2 months	12	50 to 75
3 to 6 months	36	100
7 months to 1 year	22	150
2 to 4 years	59	200

* The word "*diphtheria*" is not wholly without ambiguity. While it may be advantageously applied as a clinical term to all infective false membranes, for the sake of clearness and brevity I have employed the term "Löffleria" in reference to cases in which Löffler's bacillus is present (and demonstrated by bacteriological examination) either "pure" or "associated" with other micro-organisms, and in which false membranes may, or may not be present. (W.W.)

Careful examinations were made individually for albumen, variations in temperature, and skin lesions, in connection with the general observation of the children as a whole. A few (four) showed faint traces of albumen in the urine, but this in no case (where the urine could be regularly obtained) persisted more than three to four days, nor were there in any case any rational symptoms pointing to special disturbance of the kidneys. Three cases, eight days after the injections, and four cases nine days after the injections, had an eruption, more or less profuse, of erythematous patches of the size of a silver dollar, in some isolated, in others running together about the head, trunk, and extremities, but in no case were they associated with any appreciable fever; in this respect markedly differing from cases that have been reported of erythematous eruptions occurring with rather startling elevations of temperature. Red, pea-shaped, shotty papules appeared rather profusely on the face, in one case on the eighth day, and in another on the ninth, and the same kind of papules appeared on the face and both arms in a third case, also on the ninth day; these likewise were associated with no rise of temperature.

In sixty-nine cases out of a total of one hundred and thirty-six children immunized, the temperature rose within twelve hours from 100 to 103° F., but within the next twenty-four hours it had in all these cases virtually fallen to the normal. The amount of reaction seemed to be directly proportionate to the youth of the infants, and to their general debilitated condition, the stronger and older ones showing little reaction, scarcely being disturbed at all.

The conclusion to be drawn from this report is the apparent harmlessness of its use, in this way, with children even of tender age and condition.

It has been suggested that antitoxin has a globulicidal action. Dr. Winter (àpropos of a fatal case, Miss Valentine,) has urged that horse serum dissolved human corpuscles, and Armstrong[5] states that those who heard Dr. Winter's criticism cannot but feel that an important factor has been overlooked in the globulicidal power of alien serum on the blood of an animal into which it is injected. S. J. Metzler[6] refutes these statements on the following grounds: (1,) It has never been contended by physiologists or others that the detrimental effects of heterogeneous blood arise in connection with the subcutaneous injection of foreign blood, but only from the intravenous injection, which does not apply to antitoxic serum; (2,) Even in intravenous transfusion the fatal effect depends largely upon the quantity of the injected heterogeneous blood. Thus, Ponfick found that dogs died from transfusion of sheep's blood after two hours if

the proportion was 32 grammes of blood to 1,000 of the receiving animal, with decreasing rapidity as the proportion diminished, till if 10 to 1,000 was taken no dog died from the effects of transfusion. Taking the weight of the seventeen-year-old patient, Miss Valentine, at one hundred pounds, a 10 gramme injection was only $\frac{1}{5}$ to 1,000! (3,) Since the introduction of the experimental study and the practical preparation and application of the diphtheria antitoxin, the horse serum has been injected subcutaneously into rabbits and guinea pigs many thousand times, certainly more often than in all the experiments upon transfusion taken together. As is well known, the rabbit is the most sensitive of all animals to foreign blood; nevertheless, not even once was bloody urine observed after the injection.

We may refer in this connection to the experiments of Arloing[7] on the action of normal and anti-diphtheritic serum on the healthy organism. He made two series of injections of normal serum of a horse, and of anti-diphtheritic serum on healthy guinea pigs, which showed that *normal serum* has a prejudicial effect on nutrition, while there was a sensible retardation of development in the animals which were injected with *antidiphtheritic serum.*

I may remark (*a*,) that guinea pigs are remarkably sensitive to the prejudicial effect of serum injections, and (*b*,) that these experiments show that although the injections of antitoxin were proportionately very large, their effect on nutrition was apparently less prejudicial than was the normal serum. Nor can we overlook the investigations of W. Orlowski[8] on the natural antitoxic properties of blood serum of children. He found that (1,) In not a small number of children, who have never been attacked by diphtheria, the blood serum exerts a weakening and neutralizing action upon the diphtheria toxin; (2,) The intensity and concentration of this protective substance do not appear to be dependent upon the age of the child. But the proof of the formation of specific protective bodies under the influence of the diphtheritic process has been obtained, says the original abstractor, by Escherich. The blood serum of one of the cases had been examined and found wholly inactive. Diphtheria developed sometime afterwards, when virulent diphtheria bacilli were cultivated from the membranes in the throat. Seventeen days after the disappearance of the membranes the blood serum was again examined in the same manner as in all the other cases, with the result that all the animals protected with it remained alive.

But we cannot overlook the records of serious complications and fatal results which have followed the injection of antitoxin serum in certain non-diphtheritic cases, and the importance of this aspect of the

subject warrants careful consideration. I may refer to the cases recorded by Johanessen,[9] Alfodi,[10] Moizard,[11] and Romniciano.[12] From such cases we must conclude that although the use of the serum in the doses usually employed is in the overwhelming majority of cases attended with slight and transient disturbances, yet in some individuals, who show a special susceptibility to the remedy, the gravest symptoms, or death, may result from a relatively small dose, and that the predominant symptoms in these cases are referable to the brain and spinal cord.

Clinical Observations.—We will first discuss the evidence against sero-therapy in diphtheria. Dr. Perregaux[13] has collected and reported the accidents which are chargeable to antitoxin in the two hundred and forty-nine cases in which it was used at the Hôpital Trousseau. Of the local accidents, abscess was observed but once, but there were generally noted painful sensations at the site of the injection, lasting for twenty-four hours; these are avoided by strict asepsis of the field and of instruments. Of cutaneous manifestations during the treatment in hospital there were observed thirty-three cases; urticaria, fourteen; polymorphous erythema, nine: scarlatiniform erythema, nine; and purpura, one. After the return to their homes, fifty-seven cases: urticaria, nineteen; polymorphous erythema, five; scarlatiniform erythema, three; purpura, one. Of the articular manifestations there were observed at the hospital eleven cases; after the return to their homes, nineteen cases. Diphtheritic paralysis was noted at the hospital twice, of which one was fatal. After leaving the hospital twenty-one cases were found — four of the lower limbs and the remainder of the soft palate. Persistent albuminuria was found in six cases. Great reserve must be observed when an opinion is to be given concerning the cases of nephritis which have been suspected. The statistics of albuminuria are hardly changed by the serum therapy. Cardiac accidents are rare; only five times were their symptoms noted before death. Of the rare accidents, anuria, fetid and persistent diarrhœa, meningeal symptoms, all occurred in one case.

Welch[14] in reviewing one thousand seven hundred and two cases of diphtheria treated by the antitoxin, finds that skin eruptions and pains and swelling of the joints occur severally in about 5 per cent. of the cases. Again, he has stated[15] that there is some evidence that it causes albuminuria: albumin has been found in from 83 to 76 per cent. of all cases treated, but whatever injurious effects are felt are not permanent, and they cannot compare with the benefits. This method of treatment does not prevent post-diphtheritic paralysis; it is just as frequent whether the antitoxin be used or not.

J. E. Winters,[16] at the New York Academy of Medicine, adversely criticised the results of the Willard Parker hospital, basing his opinions on three months' daily clinical observation of the effects in one hundred and fifty-four cases in the wards. He stated that in not a single case had there been the least evidence that the formation of the false membrane had been checked, that its exfoliation had been hastened, or that the throat had been free from membrane earlier than in cases not treated with antitoxin. In not a single septic case had the antitoxin made the least impression on the symptoms. The toxæmia had not in one instance been relieved or lessened. There had been no indication in the character or frequency of the pulse, or in the general condition of the patient, that a specific for the toxæmia had been administered. He urged that the percentage of recoveries in intubation cases had been greater without antitoxin than with it, and quoted the fact that at this hospital in December, 1894, the recoveries from laryngeal diphtheria without antitoxin had been about 75 per cent. He further stated that during the first three months of 1894, the death-rate at the Willard Parker hospital without antitoxin had been 32 per cent. During the first three months of 1895, with antitoxin treatment, the death-rate had been 28 per cent. But he pointed out, that in many cases treated and included in the antitoxin statistics, there had been no clinical evidence of diphtheria. There had been cases of diphtheria from the bacteriological standpoint only (*i.e.*, "Löffleria. W.W.). Examination of the nose, throat, and constitutional condition of the patient, had revealed no evidence of diphtheria. The mere presence of the Klebs-Löffler bacillus in the throat or nose, in the absence of any lesion, was not evidence of the existence of diphtheria. On the other hand, under old statistics of Willard Parker hospital, only cases showing abundant clinical, as well as bacteriological evidence, were included, and therefore the non-clinical cases should have been eliminated from the antitoxin statistics. Moreover, many cases still in hospital were very ill and would surely die; were these included the mortality would have been startlingly high. In fact, a careful study of the individual cases of diphtheria treated with the antitoxin in the Willard Parker hospital, would show that there had been no relation between the antitoxin treatment and the recoveries; while it might be definitely stated that cases almost invariably ended in recovery under any method of treatment, if the patient was brought under proper hygienic surroundings and surveillance on the first day of the disease.

Now, as to some of the untoward or unfavourable effects of the anti-

toxin treatment. Babies had been brought to the Willard Parker hospital with slight clinical evidence of diphtheria. They had remained in good condition for perhaps ten days or two weeks after receiving antitoxin ; when you would hear a moan, and with hardly any warning, find the baby lying on its side with its head retracted, its arms and legs flexed, and moaning piteously. This was the condition of many of the little babies in the hospital. The temperature chart showed a record from 105° to 106·8°, and a note of the night nurse's told that the patient had hardly slept at all. This antitoxin infection pursued one of two courses, either the symptoms gradually subsided, leaving the baby emaciated and extremely anæmic, or there might be a fluctuating temperature, ranging from 99° to 106·8° and existing for days together. This condition was due to antitoxin septicæmia, brought about by the influence of the antitoxin on the blood. A further evidence of septicæmia had been seen in occasional suppurations, as in one case in the neck and ear, in another in small points of suppuration in various portions of the body. In these cases there would be a temperature range such as had not been seen in the hospitals of this city since the introduction of aseptic surgery. In some cases an autopsy had proved that the babies had recovered from diphtheria, and had died of pneumonia induced by antitoxin after recovery from diphtheria.

A second form of antitoxin infection, *renal inaction*, had been seen in the case of a little girl, thirteen months old.

A third form was seen in the case of babies and young children dying from convulsions, shortly after the injection of the serum, and he urged that special susceptibility to the action of the remedy had caused the death of the patient Valentine, already referred to.

It is only fair to point out that Winter's conclusions are not wholly in accordance with those of the staff of the Willard Parker hospital.

The antitoxin does not protect the nerve centres when they have been acted on by the toxin of diphtheria. It is probable that inasmuch as the action of antitoxin is a vital process, all tissues which have been so profoundly modified by the toxin, are no longer susceptible of that biological action which is the basis of resistance. The state of the tissue in nerve centres when in such a condition is analogous to that in hyperpyrexia : thus with a body temperature of over 106° F., it is often impossible to obtain any result from antipyretic remedies, and the temperature can only be reduced by the physical process of abstracting heat by cold baths, etc. It is very interesting to note the results obtained by Beck and Stapa[17] in their investigations on the influence of diphtheria virus on the circulation in rabbits. If the

virus was injected into the jugular vein no alteration in blood pressure was observed for some hours, but if the registration of blood pressure was commenced on the day following the injection—that is, a short time before death -- the results were invariably that no abnormality of blood pressure was observed half an hour or an hour before death ; only just before death the heart's action suddenly became irregular, and the blood pressure rapidly fell. These results accord with the clinical facts observed in man. The disturbance in circulation is due to cardiac paralysis alone, and not to paralysis of the respiratory or vaso-motor centres, for when the blood pressure began to fall, either artificial respiration or ligature of the aorta below the diaphragm was performed, but neither prevented the fall of blood-pressure for a moment. The toxin does not act as an ordinary chemical poison when introduced into the circulation, for then it would begin to act at once. Neither can this action be due to anatomical changes, for their gradual development would affect the blood pressure curve earlier, and the authors are driven to suppose that the cardiac paralysis is due to a disturbance of nutrition of the nerve centres supplying the cardiac muscles. It has been urged that renal complications, albuminuria and anuria, are more frequent under the antitoxin treatment. Hewlett[18] states that experimentally they do not occur, and that Martin, in his clinic at the "Hôpiteaux des Infants Malades," Paris, points out the comparative infrequency of albuminuria among diphtheritic cases treated with antitoxin ; but Hewlett observes it is quite possible that in some instances the foreign albumin is excreted by the kidneys, and so gives rise to spurious albuminuria. A great deal has been made of the supposed effect of the antitoxin on the kidneys, and several observers have attributed suppression of urine, nephritis, and albuminuria to its use. In reply, we may refer to the occurrence of anuria in cases not so treated, reported by Leonard Wilde.[19] He records three : (1,) A girl, aged four, pharyngeal and nasal diphtheria with suppression of urine during the second week of illness ; (2,) A girl, aged three, pharyngeal and nasal diphtheria, suppression of urine in the sixth day of disease ; (3,) A girl, aged four, pharyngeal and nasal diphtheria, suppression of urine on the fourteenth day of illness ; and concludes : "Few deductions can be made from such a small series of cases, but certain features were present in all three. The type of the disease was very severe. The nasal cavity was implicated in each case, and pallor, languor, and debility, with the physical signs of peripheral paralysis, were prominent. In two of the cases the supervention of anuria occurred in the afebrile period of the illness, and it was accompanied by profuse diarrhœa and vomiting.

It was of gradual onset and the urine contained a considerable quantity of albumen without casts. The heart was not particularly affected. The cause of the anuria in these cases may possibly be the result of nerve degeneration. Moreover, the frequent association of an intractable and copious vomiting and diarrhœa might indicate a profound interference with the functions of the abdominal sympathetic system, leading to the blood-flooding of the splanchnic area and the consequent lowering of the renal blood pressure to the point at which urinary filtration can no longer occur."

More conclusively in favour of antitoxin in this connection are the observations of Goodall on one hundred and five cases (all "Löffleria") at the Eastern hospital, in which albuminuria was present in 53·3 per cent., with nine cases of anuria; while in one hundred and thirty-six cases treated concurrently without antitoxin, albuminuria was present in 49·2 per cent., with twelve cases of anuria. Rosenthal, in his two hundred and twenty-two "serum" cases, found albuminuria in twenty-four before injection, and in two after injection, with one case of "anuria," but no nephritis. Baginsky, in his monograph, states that in five hundred and twenty-five cases treated with serum there were 40·9 per cent. of albuminuric cases, and 12·57 per cent. of clinical nephritis, and 15·8 per cent. on post mortem examination; while in nine hundred and ninety-three treated without serum there were 40·0 per cent. albuminuria, and 25·78 per cent. of clinical nephritis, and 16·3 per cent. of nephritis verified post mortem.

Lastly, amongst others, we may quote Hewlett's reference to Gayton's views[20] (North Western Fever hospital). In his series of cases he considered that "those cases that under the old treatment would probably have died were still fatal under the new; those which might get better recovered in about the same proportion, whilst the mild cases improved no more rapidly—indeed rather the contrary."

So much for the adverse opinions of the treatment, criticisms which are probably fairly correct as regards the cases observed by the authorities quoted. Yet the following table will show the views of the overwhelming majority of those who have used the antitoxin serum.

The mortality before sero-therapy (when given) averages 39·3 per cent. One thousand five hundred and sixty-six cases, in which Löffler's bacillus was definitely stated to have been present (except in thirteen), gave an average mortality of 16·0 per cent.

Statistics all show the paramount importance of *early* treatment by serum, mortality enormously increasing with the days of the disease before treatment.

Reporter.	No. of Cases.	Mortality per cent.		Remarks.
		With Serum.	Before.	
Withington[21]	80	16	52·3	All "Löffleria," all severe; two fatal cases had scarlatina, 43 intubated, 1 tracheotomy.
Lebreton and Magdelaine.[22]	250	12·4		All "Löffleria;" only other treatment chloride water lotion.
Browne.[23]	35	5·7		All doubtful cases confirmed bacteriologically; all grave, 20 malignant, 1 moribund.
Bokai.[24]	1:0	25·8	60·2	All but 5 confirmed by bacteriological examination.
D'Espine.[25]	60	10·0		All but 6 confirmed by bacteriological examination.
Perregaux.[26]	249	14·7		158 "Löffleria; 102 pure, 19 died; 56 associated, 10 died.
Bunch for F. T. Roberts.[27]	13	15·4		All "Löffleria."
Sevestre and Mesley.[28]	150	10·0		All "Löffleria"; 96 pure "Löffleria," 7 died; 54 associated "Löffleria," 8 died.
Eulenberg.[29]	5,750	9·5	14·7 concurrent	Collected from private practice. Mortality with serum. Without. Under 2 years ... 27·1 ... 39·3 2 to 10 ,, ... 8·8 ... 15·2 Over 10 ,, ... 4·1 ... 3·8 Mortality of those treated. 1st or 2nd day... ... 4.2 Third day or after ... 16·8
Tirard.[30]	16	12·5		
Caiger.[31]	230	?		Mortality lessened.
Egidi.[32]	20	25·0		All "Löffleria" but 4; 19 under 8 years.
Ricci.[33]	10	1·0		All membranous croup.
Morax.[34]	85	16·4		
O. Soltmann.[35]	122	18·0	37 to 64	
Hager.[36]	25	4·0	39 8	Private practice; fatal case moribund when seen.
Union de la Cienças.[37]	156	13·46	54·0	
F. H. Williams.[38]	18	22·2		Four mild, 7 medium, 1 severe, 3 hopeless.
Leichtenstern and Wendelstadt.[39]	123	20·3	30.9	No bacteriological examination.
Heubner.[40]	1,390	21·0	39·0	558 examined, all "Löffleria" but 61.
Baginsky.[41]	525	15·81	41·0	Mortality without. With serum.* Age, 0 to 2 ... 63·3 ... 25·2 2 to 4 ... 52·0 ... 17·1 4 to 6 ... 37·9 ... 17·2 6 to 8 ... 27·4 ... 11·3 8 to 10 ... 19·3 ... 5·7 10 to 12 ... 15·0 ... 10·0 *Cases treated. Death rate. On 1st day ... 2.5 per cent. 2nd ,, ... 10 ,, 3rd ,, ... 14 ,, 4th ,, ... 23 ,, 5th ,, ... 35 ,, 6th day and after 25 to 60 ,,
Widerhofer.[42]	3·0	23·7	46·0	
Kohtz.[43]	47	17·5	44·4	
Stintzing.[44]	59	20·0	26·0	
Rauchfuss.[45]	100	34·0	55·0	Including those seen "*in articulo mortis*" *ab initio*.

Reporter.	No. of Cases.	Mortality per cent.		Remarks.
		With Serum.	Before.	
V. Moring.[46]	74	5·0	28·0	
V. Noorden.[47]	81	23·0	45·0	
Goodall.[48]	105	22·8	33·0	All "Löffleria,"
				Age. Mortality without. With serum. Under 5 ... 47·7 ... 29·8 per cent. 5 to 10 ... 30·4 ... 16·6 ,, 10 to 15 .. 4·3 ... 8·3 ,, 33·6 27·8 per cent.
V. Ranke.[49]	163	17·7	57·0	154 "Löffleria;" mortality of these 18·8 per cent.; 9 no Löffler bacilli found. Treated. Mortality. 1st day ... ... 5·2 per cent. 2nd ,, ... 8·5 ,, 3rd ,, ... 17·9 ,, 4th ,, ... 15·8 ,, 5th ,, ... 11·1 ,, 6th ,, ... 40 ,, 7th day and later 46·6 ,,
Roaldes.[50]	250	8·0	22·02 (All Löff.)	All "Löffleria"; no selection of patients; private practice, rich and poor.
Rosenthal.[51]	22	5·95		118 bacteriologically examined; cases collected from private practice.
Fischer.[52]	34	5·8		29 malignant, 1 moribund, 4 mild.
Gov. of Croatia and Slavonica.[53][54]	255 rural. 1173 urban.	11·4 9·7		282 were severe cases.

Out of the total number of cases tabulated above, the mortality is given in eleven thousand one hundred, and the average of these is but 15·4 per cent.

To these I would add the statistics collected by Glaister, and which I quote from the "Glasgow Medical Journal," for August, 1895, referring to eight hundred and fourteen cases not already alluded to.

French Statistics.[55]—Before using serum the mortality from diphtheria in Parisian hospitals, according to Roux, had scarcely ever been below 50 per cent.; since its use, the mortality has fallen to less than 24 per cent., all of the cases being diagnosed bacteriologically. In the diphtheria wards of the Trousseau hospital, for the four years before the serum treatment, the mortality was 51·71 per cent. of the total cases. From February 1 to July 24, 1894, the serum treatment was applied on four hundred and forty-eight children, of whom one hundred and nine died, equal to 24·5 per cent. mortality. During the same time, at the Trousseau hospital, when the serum treatment was not used, there were five hundred and twenty cases, of which three hundred and sixteen died, equal to 60 per cent. mortality.

The results were not atributable to the presence of a *benign* type of the disease.

A committee of the Paris Academy of Medicine reported that, after observation, "We are now in possession of a specific treatment of diphtheria as powerful as it is harmless."

In the early part of December last year, the Medical Society of Berlin had under discussion this new diphtheria treatment. Professor Virchow said that this was begun, in March of last year, in one of the Berlin hospitals, and that by June and July all the diphtheria cases admitted were treated with this serum. Then the supply of serum suddenly ceased, and the hospital authorities were compelled to fall back upon the usual ordinary lines of treatment, resulting in an increased mortality, which so alarmed the hospital authorities that a new supply of serum was obtained, and followed immediately by a beneficial change in the mortality rate, the total figures being five hundred and thirty three cases, of which three hundred and three, treated with serum, had a percentage death rate of 13·2; while two hundred and thirty, treated without serum, had a percentage death rate of 47·8. He held it to be the duty of every physician to use the remedy in every case of diphtheria, although he himself could not explain the action of the serum.

Dr. Unterholzner gave figures of treatment in Leopoldstadt Children's hospital, Vienna, as follows :—

Age.	With Serum. Treated.	Died.	Without Serum. Treated.	Died.
Under 1 year	2	1	2	1
1 to 2 years	9	5	6	6
2 to 3 ,,	7	2	7	6
3 to 4 ,,	3	0	5	4
4 to 5 ,,	2	0	2	2
5 to 6 ,,	1	0	2	1
6 to 7 ,,	2	0	2	2
7 to 8 ,,	2	0	6	1
8 to 13 ,,	3	0	4	1
	31	8	36	24

Dr. Germonig,[56] to the Medical Society of Trieste, gave the results of the treatment of two hundred and twenty-four cases of diphtheria by Behring's serum, the mortality being 20·3 per cent. The mortality (usual) from this disease in the civic hospital in the years from 1886 to 1894 was 60 per cent. of all cases admitted.

A paper read before the Clinical Society of London, by Drs. Washbourn and Goodall and Mr. Card jointly,[57] showed the mortality of diphtheria in children under fifteen at the Eastern hospital, London, to be as follows: From September 14, 1894, thirty-nine days, treated *without* serum seventy-two cases with twenty-eight deaths, a mortality of 38·8 per cent., about an average with two preceding years. From October 23, 1894, thirty-six days, treated *with* serum seventy-two cases, fourteen deaths, a mortality of 19·4 per cent.

At the Western Fever hospital, London, fifty-eight cases from November 26, 1893, to January 25, 1894, treated *without* serum, with nineteen deaths, a mortality of 32·85 per cent. Sixty-eight cases admitted from November 26, 1894, to January 26, 1895, treated *with* serum, with ten deaths, a mortality of 14·7 per cent. All the cases were verified as being diphtheria by bacteriological diagnosis.

Effect on Laryngeal Complications.—Not the least remarkable feature in connection with the antitoxin treatment is the improved results in intubation and tracheotomy. Thus Bokai, in one hundred and twenty cases treated, had sixty-three cases of laryngeal stenosis, forty-nine were intubated, with twenty-one recoveries (43 per cent.); average period of retention of tube before sero-therapy 80·5 hours; with sero-therapy, 58 hours. Perregaux, in two hundred and forty-nine cases, resorted to tracheotomy in thirty-nine (fourteen deaths), and intubation in eighteen (secondary tracheotomy in six, seven deaths). Sevestre and Meslay, in eighty-seven cases, in which the larynx was implicated, did tracheotomy in eighteen, and intubation in nine only, and yet there were only eleven deaths in the whole series. Heubner, in reporting one hundred and eighty-one cases of pure diphtheria, states that with regard to the invasion of the mucous membrane, it was found the larynx and trachea were affected in sixteen only; but the larynx was never involved, nor were false membranes reproduced in sero-therapised cases. A comparison of observations before and after sero-therapy brings out two important points, viz., attenuation of the fever, and early expulsion of false membranes. Of sixteen cases in which the larynx was affected before injection, it cleared in nine without operation under sero-therapy. Rauchfuss reports that in many cases the larynx cleared spontaneously. Widerhofer, in three hundred patients, had one hundred and eighty-one cases of laryngeal stenosis; of these twenty-two recovered spontaneously, fifty-one were tracheotomised, one hundred and eight intubated, with 50 per cent. recoveries. Ranke, out of ninety-five cases of diphtheritic croup, found that in twenty-seven the laryngo-stenosis disappeared soon after the first injection; formerly the spontaneous disappearance of laryngo-stenosis occurred in only 5 per cent. of his cases. He further remarks that what seems to prove the value of the serum treatment even more than these statistical figures, is the change in the clinical course of the disease; under the influence of the serum treatment diphtheria loses its progressive character, and this comes out most remarkably in regard to diphtheritic laryngo-stenosis. Amongst his one hundred and sixty-three cases he has

not had a single instance in which laryngo-stenosis developed itself after injection, if symptoms of it had not been present already on admission. Tirard remarks that the effects of the treatment were very striking; "the membrane went," there was marked improvement in the general condition, the pulse increased in force, and the temperature fell, or, at any rate, did not rise.

I may here add notes of twelve thousand four hundred and eighty-eight cases in which the serum was injected for prophylactic purposes, sixty-one cases subsequently contracting the disease.

Prophylactic.	No. of cases inoculated.	Subsequently contracted diphtheria.	Remarks.
Heubner ("Med Week," April 12, 1895).	64.	2	
Baginsky (Ibid.).	150.	2	
Widerhofer (Ibid.).	130 (at home).	2	
	110 (hospital).	1	
	188 (country).	5	
Allen Thomas "(New York Med. Rec.," June 15, 1895).	136 (Nursery and Child's Hospital).	0	But a R.M.O. and a nurse, who were not immunized, contracted diphtheria.
Hager ("Cent. fur Inn. Med.," No. 48, 1894.	35 (in infected families).	4	Two recovered without treatment.
Behring ("Deutsch. Med. Woch.," Nov. 15, 1894).	10,000 (where diphtheria was raging).	10	All mild; the 10,000 were injected with 60 units, but Behring recommends 150 for prophylaxis.
Rosenthal ("Int. Med. Mag.," Nov., 1895).	276 (201 showed bacilli on examination).	1	
Richter (Marienberg) ("Deutsch. Med. Woch.," No. 7, 1895).	62.	7	
Gov. of Croatia and Slavonica ("Wien. Klin. Woch.," May 2; "Brit. Med. Journ.," June 8, 1895).	826 (all exposed to infection).	17	Sixteen were mild, one fatal, five contracted within eight days.
Peck ("New York Med. Journ.," April 13, 1895).	511 (New York Infants' Asylum).	1 or 2	No case developed until three weeks had elapsed. All were exposed to diphtheria contagion; quarantine measures had proved unavailing.

The limitations of space prevent my quoting further and ample evidence showing that as regards both tracheotomy and intubation: firstly, operation is less frequently necessary; and, secondly, when necessary, the percentage of recoveries is far more favourable than in cases treated without serum.

Enough cases have been included in the observations recorded to form a very fair idea of what antitoxic serum has done for cases of diphtheria.

At the discussion on diphtheria at the British Medical Association Meeting in London, on July 31, Hermann Biggs,[58] of New York, stated that in one asylum in which diphtheria had been very frequently met with, the whole of the children were immunized with 200 units each of Behring's serum, excepting in the case of very young children, who received only from 120 to 150 units each. There was an immediate cessation of the outbreak, and not one case appeared until the nineteenth day, when one patient had a mild attack. Then other cases occurred on the thirtieth and thirty-first, and during the following week five other cases appeared. The immunization process was repeated, and from that date to July 15 only three cases occurred. That the infective material was still present was evident from the fact that three cases brought in and not immunized all took diphtheria, whilst in certain cases virulent Löffler bacilli were demonstrated as being present in the throats. In the Child's hospital there were forty-six cases of diphtheria during fifteen or twenty days before the immunization process was carried out, after which not one single child took the disease, though one of the nurses and the resident physician, who had not been immunized, were both attacked, whilst in the throats of eleven of the cases that had been immunized, and which were examined for diphtheria bacilli, a positive result was obtained in six, but in none of these cases was there any outbreak of the disease. From this and other experiments he argued that the period of protection really extended over about thirty days. In none of the cases infected had there been any unfavourable symptoms beyond urticaria and slight morbilliform rashes, which usually made their appearance about the ninth day after injection, whilst at the time of injection there was frequently a slight rise of temperature, so insignificant, however, as to call for little attention.

Duration of Prophylactic Immunity.—Ohlmacher,[59] from experiments on animals, concludes that the immunity is powerfully operative at the end of twenty hours; that it gradually diminishes in the week following; that *at the end of eight days the immunity is very much diminished;* and that the blood serum of a dog rendered

immune against the diphtheria toxin by an injection does not attain pronounced antidotal properties, even though the dog successfully withstands large doses of the toxin.

. We have referred to Hermann Biggs' statistics and experiences, from which he argued that the period of protection extended over about thirty days.

REFERENCES.—[1] "Glasgow Med. Journ.," July, 1895 ; [2] Loc. cit. ; [3] "New York Med. Journ.," April 13, 1895 ; [4] Ibid, June 15, 1895 ; [5] Ibid., April 13, 1895 ; [6] Ibid., April 27, 1895 ; [7] "Lyon Méd.," June 2, 1895, Epit. "Brit. Med. Journ.," June 29, 1895 ; [8] "Deutsch. Med. Woch., 1895, No. 25, p. 400, "Amer. Med. Surg. Bull.," Aug. 15, 1895 ; [9] "Brit. Med. Journ.," May 14, 1895 ; [10] Gajógyaázat, "Brit. Med. Journ.," May 14, 1895 ; [11] "Med. Week.," July 12, 1895 ; [12] "Med. Rec.," May 25, 1895 ; [13] "Journ. des Prat.," 1895, No. 8, p. 120 ; [14] "Amer. Journ. of Med. Sci.," June, 1895 ; "Bull. of John Hopkins Hosp.," vi., 1895, p. 97 ; [15] "New York Med. Rec.," June 15, 1895 ; [15] "New York Med. Journ.," April 13, 1895 ; [17] "Brit. Med. Journ." Epit., June 8, 1895 ; [18] "Pract.," Dec., 1895 ; [19] "Brit. Med. Journ.," May 11, 1895 ; [20] Ibid., 1895, ii., p. 413 ; [21] "Boston Med. and Surg. Journ.," March 14, 1895 ; [22] "Bull. Soc. Méd. des Hôp.," Feb. 7, 1895 ; [23] "Med. Rec.," April 27, 1895 ; [24] "Deutsch. Med. Woch.," April 11, 1895 ; [25] "Rev. Méd. de la Suisse Rom.," April 20, "Brit. Med. Journ.," Jan. 18, 1895 ; [26] "These de Paris," 1895 ; [27] "Lancet," April 13, 1895 ; [28] "Bull. Soc. Méd. d'Hôp.," March 1, 1895 ; [29] "Med. Week.," July 26, 1895 ; [30] "Lancet," Aug. 10, 1895 ; [31] Ibid. ; [32] "Supp. at Policlin.," May 25, "Brit. Med. Journ." Aug. 10, 1895 ; [33] Ibid., April 29 ; [34] "Sem. Med.," May 8, 1895 ; [35] "Deutsch. Med. Woch.," No. 4, p. 53, 1895 ; [36] "Cent. f. inn. Med.," 48, 1894 ; [37] "Brit. Med. Journ.," July 6, 1895 ; [38] "Amer. Journ. of Med. Sci.," Aug., 1895 ; [39] "Munch. Med. Woch.," June 11, 1895 ; [40] "Med. Week.," April 12, 1895 ; [41] "Ibid. ; [42] Ibid. ; [43] "Med. Week.," April 12, 1895 ; [44] Ibid. ; [45] Ibid. ; [46] Ibid. ; [47] Ibid. ; [48] "Brit. Med. Journ.," Aug. 24, 1895 ; [49] Ibid. ; [50] "Journ. of Lar.," Sept., 1895 ; [51] "Int. Med. Mag.," Nov., 1895 ; [52] "Amer. Journ. of Med. Sci," Jan., 1895 ; [53] "Wien. Klin. Woch.," May 2, "Brit. Med. Journ.," June 8, 1895 ; [54] Ibid. ; [55] Cf. "Brit. Med. Journ.," Oct. 27, 1894, p. 931 ; [56] Ibid., Feb. 2, 1895, p. 262 ; [57] Ibid., Dec. 22, 1894, p. 1, 418 ; [58] "Lancet," Aug. 10, 1895 ; [59] "Med. Rec.," May 18, 1895.

DIPHTHERIA OF CONJUNCTIVITA. (See "Eye, Diseases of.")

DISLOCATIONS. *Priestley Leech, M.D., F.R.C.S.*

The difficulty of reducing a dislocation of the humerus complicated with fracture at or near its surgical neck led McBurney[1] to try the following method with success. An incision one and a half inches long is made about one inch below the acromion. The incision is carried through the deltoid muscle to the outer surface of the upper fragment. (A drill and a stout hook bent at right angles, of the same size as the drill, were previously made.) With the drill a hole is then

made, and the hook inserted as far as it will go. Traction is made in a proper direction by the hook, and reduction accomplished. Wound closed. Dressing applied and the whole shoulder, upper arm and forearm enveloped in a plaster of Paris case. The patient said his arm was as good as before. The article is illustrated.

REFERENCE.—[1] "Annals of Surgery," April, 1894.

DYSENTERY.

Synopsis.—(Vol. 1895, p. 190.) Schwarze noted that the empirics of Constantinople used **Roses, Pomegranate Root** and **Myrobalanus.** He used **Myrobalanus, Pelletierin, Extract Graminis, Extract Granati** and **Acacia,** but the first mentioned must have its purgative principles removed. Summers washes out the bowel with **Pepsin Solution,** and then gives a **Laudanum** and **Starch Enema** as hot as can be borne. Rudneff uses **Lysol Enemata,** 1% aqueous solution. **Boric Acid,** with **Tannic Acid** and **Opium** are recommended.

DYSMENORRHŒA. *Theophilus Parvin, M.D., Philadelphia.*

The administration of narcotics for difficult menstruation cannot be too severely condemned.

Schwarze favours the administration of the fluid extract of **Viburnum Prunifolium** in teaspoonful doses thrice daily for from five to seven days before, and continued during the menstruation. Local massage is useful in patients not erotic.

The introduction of the **Uterine Sound** before menstruation is frequently followed by relief, and of still greater value is dilatation of the entire cervical canal.

Electricity is also of service (galvanic current), aluminium negative pole in the uterus, positive pole upon the abdomen, the current being from 50 to 60 milliamperes.

The following is also highly recommended in the treatment of dysmenorrhœa[1]:—

℞ Potass. Bromidi	grs. x	Spir. Vini Gallici	f℥ss
Antipyrin	grs. x	Syr. Aurantii	f℥ss
Viburn. Prunif. (liq. ext.)	f℥ss	Aquæ ad	℥ss

Ft. Doses.

Repeat this twice or four times during the day.

Symptomatic Treatment of Dysmenorrhœa in Girls.—The best symptomatic treatment of dysmenorrhœa in girls, is rest in bed during the entire flow.[2] If the pains are too severe the following mixture may be given :—

℞ Antipyrin		Syr. Bitter Orange Bark	
Potass. Bromidi	āā grms. 10	Cognac	āā grms. 30
Viburn. Pru. (liq. ext.)	grms. 20	Dist. Water	grms. 120

Sig.—Take daily 4 teaspoonfuls.

Profuse Menorrhagia is treated by Rheinstader[3] with the following mixture :—

℞				
	Ergotine	grms. 10	Glycerine	grms. 10
	Distilled Water	grms. 70	Salicylic Acid	centigrms. 20

A tablespoonful is diluted with three of water, and injected into the rectum, the patient lying upon her abdomen.

REFERENCES.—[1] "Practitioner," June, 1895 ; [2] "La Progrès Médical," No. 48, 1894 ; [3] "Giorn. di Farm. di Chim."

DYSPEPSIA. (See also "Digestion, Disorders of.")

Synopsis.—(Vol. 1895, pp. 51 and 193.) For nervous dyspepsia **Sumbul, Fluid Extract.** **Salol** controls intestinal, and **Salicin** purely gastric indigestion. In the dyspepsia of women Saundby advocates the **Sulphate of Iron Pill** combined with **Magnesium Sulphate** for anæmia, or the **Tincture of Iron**; and for constipation **Strychnine** with **Magnesium** or **Sodium Sulphate Waters**, specially **Rubinat**, and given very hot. For atonic gastralgia **Ac. Hydrocyanici Dil.**, with **Dilute Ac. Hydrochlor.**, **Liq. Strychniæ** and **Sodium Chloride.** Saundby's lectures also discuss **Rest, Massage, Isolation, Climate, Diet, Exercise, Electricity, Gastric Lavage**, etc. **Papoid** is an all-round digestive and solvent. **Bismuth Subgallate** is useful for fermentative conditions. **Djambœ** is a new astringent and stomachic given in infusion, powder or fluid extract. **Hydrogen Peroxide** is of doubtful value, and may prove injurious. **Creasote** is specially indicated in the gastric catarrh of phthisis and in dyspeptic vomiting of children. **Guaiacol** and its carbonate are probably less valuable than **Salol.** **Potassium Bichromate**, in 5-milligramme doses, is used by Fraser as an analgesic and antiseptic. **Duboisin Hydrochlorate** is used by Cantu, in $\frac{1}{64}$ to $\frac{1}{160}$ grain, as an anodyne for gastro-intestinal pains. **Banana Flour** is a useful food for dyspeptics. **Somatose** is a new predigested meat powder.

DYSPEPSIA (Nervous). *Græme M Hammond, M.D., New York.*

Nervous dyspepsia, which, as a separate disease, has often been discredited by observers of neurological science, seems to Illoway[1] to demand special attention. He considers there is a nervous dyspepsia which is a symptom of some general nervous disorder, and which differs greatly from that associated with neurasthenia and hysteria. He defines this form as follows : "Nervous dyspepsia is an ailment of the stomach without any definite and fixed pathological or anatomico-pathological characteristics. It depends solely upon a disordered condition of the nerves of the stomach. The stomach is primarily affected. If any symptoms on the part of the general nervous system present themselves, they are the consequences of an irritation proceeding from the stomach, and are, therefore, secondary manifestations. The treatment must be directed to the stomach ; only in that way can the disease be quickly and positively relieved."

The symptoms briefly stated are as follows : There is neither nausea

nor vomiting. Generally, there is not any bad taste in the mouth. On the tongue in the morning there is a thin white coat, and sometimes tiny blisters can be seen. The patient complains of a lack of appetite, but, nevertheless, eats a sufficient quantity, and apparently enjoys what he eats. The stomach symptoms show themselves in fulness, over-distension, and a feeling of weight. Eructations with momentary relief continue at intervals for an hour or two after eating. This, the author claims, differs from hysterical belching, which is at all times more constant, and the eructations are more voluminous and rapid, and are not attended by any feeling of relief. Irritability is a prominent symptom, and also a disagreeable heaviness of the head, which also lasts from one to two hours. Then follows a craving for food, which is not hunger, and which is allayed by very little food or fluid. As a rule, the patients are able to attend to their usual occupations, and yet are unable to apply themselves to any arduous mental work. "Their brains tire easily." Sleep is undisturbed, as a rule. This class of cases cannot tolerate alcoholic liquors. The most prominent etiological factors are mental shock and excessive tobacco smoking. The pathology seems to the author to be centred in a super-sensitiveness of the vagus. The mechanical presence of ingesta upon the ultimate nerve filaments gives rise, the author claims, to the sensations of weight and fulness, and the general uneasiness in the stomach and intestines. He also claims there is a direct relation between the quantity of the ingesta and the degree of uneasiness experienced by the patient. He thinks the sensory transmission of this irritation to the cerebral centres causes the nervous phenomena described, and also the inability to tolerate liquors. The prognosis is favourable. Sequelæ are infrequent, and yet melancholia may result.

REFERENCE.—[1] "Med. Record," Jan. 5, 1895.

EAR (Treatment of Diseases of). *J. Dundas Grant, M.D., F.R.C.S.*

The preliminary sections of this paper correspond to the arrangement followed in the scheme for methodical diagnosis of diseases of the ear, which appeared in the "Medical Annual" for 1895. It has been found better to describe the treatment of the diseases according to the usual regional method, and the sections referred to will guide the reader to the part where the disease under his consideration is dealt with.

DEFECTIVE HEARING WITHOUT PAIN OR DISCHARGE.

A.—OBSTRUCTIVE DEAFNESS. — In these cases treatment is directed towards clearing the meatus, establishing free ventilation

of the tympanum through the nose, naso-pharynx, and Eustachian tube, diminishing relaxation of the membrane, when such exists, counteracting the effects of permanent perforations, etc., detailed as follows: *Impacted cerumen* (p. 259); *Acute Eustachian catarrh* (p. 266); *Chronic exudative catarrh of the middle ear* (p. 267); *Chronic sclerotic catarrh of the middle ear* (p. 268); *Relaxation of the membrane* (p. 268); *Persistent perforation of the membrane* (p. 271); *Cicatricial residua of suppurative inflammation of the middle ear* (p. 271).

B.—NERVE DEAFNESS.—The treatment of the various forms of nerve deafness will be found in the section devoted to diseases of the "Internal Ear, Auditory nerve and centres" (pp. 274 to 277).

The "Pilocarpin Treatment," recommended in recent effusions, is usually carried out as follows: A subcutaneous injection is made every day of a 1 in 24 solution of hydrochlorate or nitrate of pilocarpin. The initial dose is 2 minims, increased by 1 minim daily till 12 or 13 are reached, according to the patient's tolerance of the drug. To avoid chill injection should be made two hours before the patient gets out of bed, or if this is impractible, two hours before he goes to sleep, when the linen must be changed. The arms should be kept under the bed clothes, and a basin placed to catch the saliva as it dribbles. The effect is heightened if 20 minims of aromatic spirit ofammonia is previously administered, and faintness is to be combated by means of brandy or small doses of atropin. If preferred the remedy may be given by the mouth in the form of such a pill as the following:—

℞ Pilocarpin Hydrochlor. g. $\frac{1}{4}$ | Pil. Mass. q.s.
Strychniæ Sulph. g. $\frac{1}{10}$ |

Fiat pil. Sig.—To be taken night and morning.

C.—COMBINED OBSTRUCTIVE AND NERVE DEAFNESS.—See *labyrinthine diseases originating in chronic catarrh* (p. 275), or *secondary to suppurative inflammation of the middle ear* (p. 275).

DISEASES CHARACTERISED BY PAIN.

A.—CENTRED IN THE EAR.—Pain apart from impairment of function or signs of inflammation is to be treated as directed for otalgia (p. 277). When arising from acute inflammatory conditions, its treatment is given under the following headings: *Acute circumscribed or diffuse external otitis* (p. 261); *Acute myringitis* (p. 262); *Acute catarrh of the middle ear* (p. 266); *Acute suppurative inflammation of the middle ear* (p. 267).

B.—IN THE MASTOID REGION.—*Mastoid adenitis* (p. 272); *Periostitis* (p. 272); *Sub-periosteal mastoid abscess* (p. 272); *Cortical*

mastoiditis (p. 272); *Antral suppuration* (p. 272); *Mastoid neuralgia* (p. 272).

C.—More or Less Generalised with Febrile or Cerebral Disturbances.—*Acute suppuration of the middle ear* (p. 272); *Cortical mastoiditis* (p. 272); *Acute meningitis* (p. 273); *Pyæmia* (p. 273); *Retention of pus* (p. 270); *Antral mastoiditis* (p. 272); *Extra-dural abscess* (p. 273); *Sinus phlebitis* (p. 273); *Cerebral abscess* (p. 273); *Cerebellar abscess* (p. 274).

DISEASES CHARACTERISED BY DISCHARGE.

A.—Purulent. — See *Acute suppurative inflammation of the middle ear* (p. 267); *Tuberculous median otitis* (p. 267); *Chronic suppurative inflammation of the middle ear* (p. 269); *Acute diffuse external otitis* (p. 261); *Acute circumscribed external otitis* (p. 261); *Chronic external otitis* of various forms (p. 262).

B.—A Sticky Oozing.—*Eczema of the meatus* (p. 263); *Condylomata* (p. 263).

C.—More or Less Hæmorrhagic.—*Vascular granulations and angiomata* (p. 263); *Erosion of blood vessels* (p. 271); *Vicarious menstruation or hysterical otorrhagia* (p. 266).

D.—Sanious Discharge, etc.—*Malignant disease of the external meatus* (p. 266).

The "Alcohol Treatment" frequently referred to consists in the instillation of "drops" of spiritus vini rectificatus warmed, and at first diluted with 1, 2, 3 or even more parts of warm water, so that merely a bearable burning sensation is produced, then gradually with less and less water till pure spirit is used. It is most especially indicated in cases of cholesteatomatous scale formation.

"Eustachian Irrigation" is effected through a long-beaked catheter passed into the tube with, if necessary, an inner gum-elastic intra-tympanic catheter (*Fig.* 4).

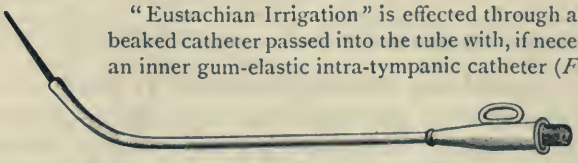

Fig. 4.

DISEASES CHARACTERISED BY NOISES IN THE HEAD.

A.—With Defective Hearing (p. 277).

B.—With Abnormal Acuteness of hearing, or Painful Sensibility to Sounds (p. 278).

C.—With Normal Hearing (p. 278).

DISEASES CHARACTERISED BY VERTIGO.

A.—With Concomitant Defect of Hearing (p. 279).

B.—Without Defect of Hearing (p. 280).

VISIBLE ABNORMALITIES OF THE ORGANS OF HEARING.

A.—Affecting the Auricle.—These are described under the heading of "Affections of the Auricle" (pp. 257-258).

B.—Affecting the External Meatus (pp. 259-266).

DISEASES AND ABNORMALITIES OF THE AURICLE.

Microtia, *macrotia*, and *polyotia*, when disfiguring, admit of removal, and the adaptation of an artificial auricle. *Projecting ears*, if not rectified by the use of pads and springs or bandages worn at night, may be fixed by operation, a portion of skin being removed from the groove at the posterior attachment of the auricle, extending on to the side of the head and on to the auricle, a portion of the conchal cartilage of which must also be taken away (Tubby) without perforating the outer surface. The raw surfaces are brought together with stitches, the auricle being bandaged to the head till union is complete.

The various *skin diseases* to which the auricle, in common with the rest of the body is liable, require treatment in accordance with the precepts of dermatology in general. We shall only refer here to some of those requiring in this region any peculiar treatment.

Eczema of the Auricle, when acute, responds best to dry dusting with such powders as iodol, dermatol, or oxide of zinc with starch. On each occasion the part may be previously washed with weak sublimate (1 in 1,000) solution. When less moist, an ointment of iodol or ammonio-chloride of mercury with coal tar is best, firm crusts being previously softened with olive oil and removed. When there is much thickening, a weak mercurial ointment may be rubbed well in, massage being thus at the same time practised by means of the finger and thumb. Bronner uses yellow oxide of mercury; Daly, calomel, the latter insisting that the part should be previously moistened. Unna's muslins (mulls) may be employed, the zinc-carbol gelatin being particularly useful. Internal administration of aperients is often indicated, and gout or seborrhœa, if present, must receive attention.

Lupus erythematosus is now found to be most benefited by the internal administration of quinine (Payne).

Lupus vulgaris calls for active local treatment—erosion, cauterisation, etc., obstinate cases appearing to answer to surgical measures more readily if they have been previously submitted to a course of tuberculin. Local protection from exposure to cold and general support—cod-liver oil, arsenic, etc.—are important adjuvants.

Erysipelas of the Auricle calls for general as well as local treatment. Internally, in most cases, the combination of iron with acetate of ammonia is valuable. In hepatic cases mercurials and saline aperients are required. When the erysipelas wanders from one part of the body to another, quinine is most efficacious. Locally, the ear should be kept covered with lint, constantly moistened with Goulard's lotion, with which may be mixed a little oxide of zinc. If it tends to spread, a line of delimitation must be marked out with liniment of iodine.

Perichondritis of the auricle calls for evaporating lead lotion, ice, or the cold coil, while the furuncle or other cause is treated. On the occurrence of suppuration, incision is required.

Hæmatoma, whether traumatic or idiopathic, may at first be treated by constant application of Goulard's lotion. As the heat of the part diminishes, massage should be practised for about a quarter of an hour daily, the part being previously lubricated with vaseline or some soft ointment, and kept as far as possible in shape by the application of compresses of cotton-wool and gauze on both surfaces; these should be firmly bandaged and retained for the rest of the time. In case of extreme distension, the blood clot may be evacuated by means of an aseptic incision, as also the pus if suppuration takes place.

Gangrene from exposure to cold admits of little treatment, but the prophylactic measures are the well known avoidance of the application of heat to the frost-bitten part, and employment of means to check the too rapid return of circulation, namely, rubbing the part with snow.

True Raynaud's disease is characterised by its paroxysmal character, and tendency to attack the tips of the toe and finger.

New growths have to be treated according to their nature, much as in other regions. Among those presenting peculiarities when situated in this part, may be mentioned the following :—

Tumours of the lobule, occurring at the site of the perforation for ear-rings, generally admit of removal.

Epithelioma may often be excised without sacrifice of the whole auricle. It has been found (Spalding) that better healing, with less chance of recurrence, ensues when fine straps of adhesive plaster are employed instead of sutures.

DISEASES AND ABNORMALITIES OF THE EXTERNAL MEATUS.

Impaction of Cerumen.—This should, of course, be removed by means of the syringe, sometimes rather a lengthy procedure, but which may be greatly shortened and facilitated if the plug is gently detached from the roof of the meatus by means of a small curette. For those, however, who are not accustomed to manipulate instruments in the ear, it is, on the whole, safer to soften the wax for a few days by means of such solvent drops as the following :—

℞ Sodii Bicarb. 15 grs | Aq. Destillat. ad ℥j
Glycerini ℥iij |

The drops for the ear to be warmed before use.

In the use of the curette, too great caution cannot be practised to avoid scratching the floor of the meatus, because, as has been already pointed out, this portion of the auditory canal is sometimes extremely convex, and, when plastered over with even a very thin layer of cerumen, may give the appearance of a large plug of that substance and mislead the manipulator, unless he is on his guard. It is to be remembered that an accumulation of cerumen is often complicated with external otitis, giving rise to a considerable amount of pain, which will be treated of in the appropriate place. Also further, a form of external otitis characterised by the shedding of large quantities of epithelial scales and *débris* often leads to the formation of a plug simulating impacted cerumen. It is, however, much lighter in colour, and its separation from the walls of the meatus is extremely painful. It has been very well named *keratosis obturans.* It is difficult or impossible to remove this by means of simple syringing; in fact, the action of the liquid is to make the plug swell, and to increase the pain produced. The best instillation for the purpose of softening it is glycerine (to which Mr. R. Lake advises the addition of salicylic acid), and after a few days of its use the plug can generally be removed by means of a blunt curette and delicate forceps. Fortunately, the condition is not a very common one, but the difficulties connected with it must be kept well in mind.

Foreign Bodies.—In every case syringing should be thoroughly tried with or without a fine gum-elastic tip to the syringe, unless : (1,) The foreign body is the ivory head of a pencil with its cavity opening outwards ; (2,) The membrane is ruptured ; or (3,) The body is a soft one and likely to swell. In the last case the tendency to soften may be prevented by pouring alcohol into the ear (the case of a soft body is just the most favourable one for the employment of a hook*)*; or (4,)

The soft parts of the meatus have become swollen and inflamed through previous unskilful attempts at removal; or (5,) The foreign body has been pushed beyond the narrowest part of the osseous meatus.

In cases where syringing is thus contra-indicated or fails, then, under favourable circumstances, a fine instrument like a crochet-hook, but with a sharper recurved point, is by far the best instrument (*Fig.*

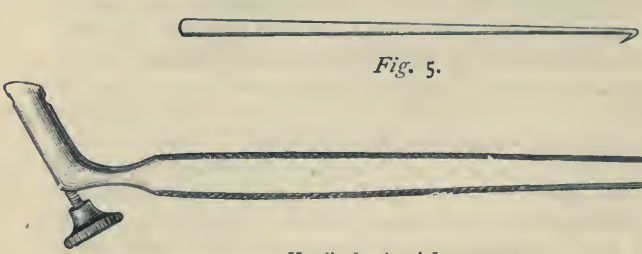

Fig. 5.

Handle for Aural Instruments.

5). If the foreign body is not very deeply situated, the instrument should be passed along its upper surface; if very deeply, along the anterior.

If there is extreme swelling of the meatal walls from previous unskilful attempts or other causes, this swelling should first be combated by the application of a cold Leiter's coil and boric insufflations or drops (with alcohol), operative measures being resumed on the subsidence of the swelling.

If in case of foreign bodies lying beyond the isthmus, or in the tympanum, careful attempts at extraction fail, no further interference is permissible until circumstances become more favourable, or dangerous symptoms appear, it being remembered that foreign bodies may often remain undisturbed without causing any serious injury. The more urgent dangerous symptoms are (according to Zanfal) fever, optic neuritis, choked disc, or even an increase of the redness of the disc as compared with its colour at the outset. In their presence it may be necessary to separate the auricle and cartilage and membranous meatus by means of the post-auricular incision, or even to chisel away the outer wall of the attic or part of the posterior wall of the osseous meatus.

When the membrane is ruptured and the "crochet-hook" instrument is ineffectual, syringing through the Eustachian tube is advisable.

If the object has a hole opening outwards—the ivory head of a

pencil or a bead—a fine moistened laminaria tent may be introduced into the hole and allowed to swell.

Living objects—insects, etc.—should be killed by the instillation of oil.

Cherry-stones or analogous objects may have a hole burned in them by means of the galvano-cautery, and through this a fine hook may be introduced.

A loop of silver wire is recommended by Mr. Hutchinson, a special gripper by Mr. Ward Cousins, and Loewenberg has advised the use of the "agglutinative method," namely, the application of a brush or stick charged with liquid glue or cement, or in case of a smooth glass bead, with molten borax.

The following GENERAL RULES WITH REGARD TO FOREIGN BODIES are of value :—

(1,) Avoid the use of forceps unless there is a certainty that the body can be easily seized. They are, as a rule, the very worst instruments that can be employed.

(2,) Administer an anæsthetic (nitrous oxide gas is often sufficient) in cases of restlessness or difficulty, especially in children.

(3,) In case of swelling of the meatus or other serious obstacle, wait patiently in the absence of dangerous symptoms, and remember that "spontaneous expulsion" sometimes occurs.

Acute Diffuse External Otitis.—When the pain is the main symptom, this is best treated by application of heat by means of warm fomentations and the instillation of sedative drops of 5 to 10 per cent. solution of cocaine, or the introduction of Gruber's aural ovoids (Law). Internally, phenacetin in 5-grain doses may be given every four hours.

In extreme cases leeches (natural or artificial) must be applied to the tragus (p. 262), and opium in some form may be required. The patient must be kept in a warm room.

When the discharge is profuse it must be washed out with soda lotion, after which the meatus must be dried and powdered boric acid insufflated. In the case of individuals in whom boric acid causes irritation, this should be combated by the application of ointment of oleate of zinc, and then drops of weak solution of subacetate of lead should be introduced. If there is narrowing, these drops must be introduced on pledgets of wool.

Acute Circumscribed External Otitis calls for the application of warmth, the instillation of 1 in 20 carbolic acid in glycerine, or Gruber's aural ovoids of morphia in the early stages. As soon as the suppurating spot can be definitely localized, it should be deeply incised. This is best done by means of the writer's recurved aural

furuncle knife (*Fig.* 6), after the application of cocaine hydrochlorate, 20 per cent., or if possible, administration of nitrous oxide gas. After the evacuation, the meatus should be frequently syringed with a 1 in 4,000 solution of perchloride or biniodide of mercury, and

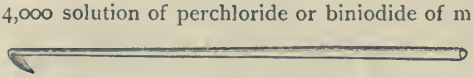

Fig. 6.

tampons of gauze dipped in warm Goulard's lotion should be worn in the meatus. In plethoric subjects blood may be drawn by means of the natural, or, better, the artificial leech on the tragus. During the stage of extreme pain, 5 grains of phenacetin in a cachet may be given every four hours, and if necessary morphia or opium. The writer has found the liquor opii sedativus in 5-drop doses tolerated by patients who were unable to take the drug in any other form. Unna's plaster mull of mercury, carbolic acid, and oxide of zinc, has been reported by Dr. Eddowes to have been beneficial in such cases, when rolled up in the form of a hollow cylinder and introduced into the meatus. After the occurrence of discharge it yields best to instillations of solutions of acetate of lead, 5 grains to the ounce. If a granulation forms at the site of the furuncle it should be removed with the curette (p. 269) or cauterized with the galvano-cautery or perchloride of iron. To prevent recurrence, very weak ointment of the nitrate of mercury may be applied, and sulphide of calcium, $\frac{1}{4}$ of a grain three times a day, may be taken.

Acute Myringitis, if, as rarely happens, it is unassociated with any other affection of the external or middle ear, is best treated by the avoidance of irritation and by careful protection by means of a pledget of wool in the meatus. Should blisters form on the surface of the membrane, they should be incised.

Chronic External Otitis, when secondary to chronic suppuration of the middle ear, calls for treatment of the causative lesion. When primary discharge is to be treated, by cleansing with soda or boracic lotion, gentle drying with absorbent wool and insufflation of boracic acid or dermatol. If there is narrowing, plugs of cotton wool moistened with Goulard's lotion must be inserted. Benefit may be obtained from the pressure afforded by the introduction of india-rubber drainage tubes. Granulations on the walls or tympanic membrane should be cauterized with nitrate of silver, chromic acid, or solution of perchloride of iron, or scraped away with a curette (p. 269).

Desquamative Dermatitis of the Meatus and Membrane calls for softening and deodorising with drops of glycerine, of carbolic acid diluted with 3 parts of glycerine (not water), and removal of the

collection by means of syringings with soda lotion, aided by fine forceps, the spud, and the absorbent wool brush. Recurrence is to be prevented by the instillation of drops of a 1 in 20 solution of boric acid in alcohol.

For *Parasitic External Otitis* drops of corrosive sublimate in alcohol (gr. j ad ℥j) are to be instilled.

Carious spots should be scraped and surrounding granulations removed, after which iodoform or iodol should be insufflated, and antiseptic irrigation should be regularly practised with biniodide of mercury (1 in 4,000).

Sequestra, if loose, should be broken into pieces and then removed piece-meal. It is unjustifiable to lacerate the meatus, *a fortiori* the facial nerve, in order to obtain a good museum specimen. When not loose they must be left, but granulations must be scraped away and antiseptic irrigation practised. It is sometimes necessary to open the cartilaginous meatus from behind, as for certain foreign bodies.

Eczema of the Meatus when acute and accompanied by considerable oozing yields most readily to antiseptic astringent powders, such as dermatol or iodol. Crusts may be softened with olive oil containing a grain of menthol to the ounce, then wiped away with absorbent wool, or washed out in 1 in 4,000 sublimate or weak coal-tar lotion. The raw surface in moist cases may then be dusted with powder, or in scaly cases smeared with iodol ointment, or zinc ox., hydrarg. amm. chlor. āā gr. v, liq. carbon deterg. ♏v, aq. rosæ ℥j, lanolin. ad ℥j. The ointment of oleate of zinc is another mild and effective preparation. Painting with a solution of nitrate of silver (gr. xx ad ℥j) is much recommended.

Condylomata.—Drying, followed by dusting with calomel or iodol, and combined with constitutional treatment, speedily effects a cure. Chronic middle ear suppuration is often present as an element in the causation, and requires appropriate treatment.

Meatal Polypi may be avulsed by means of ring forceps or Wilde's snare. If there is doubt as to their being possibly tympanic they should be excised, the pedicle being *cut through* with a fine-wired snare.

Granulations on the meatal walls should be snared or curetted, or, if small, cauterised with perchloride of iron or the galvano-cautery. On the membrane, perchloride of iron is best. Drops of chloride of zinc in alcohol (gr. v ad ℥j) should afterwards be employed.

Vascular Granulations call for treatment as described. *Angiomata*, if pedunculated, may be snared. If necessary, electrolysis may be employed.

Atresia, when *congenital*, does not admit of operative treatment, as it indicates an imperfect development of the conducting apparatus, a condition further confirmed if the corresponding half of the lower jaw is abnormally small. When *acquired*, however, the case is quite different, and *inflammatory adhesive atresia* may be operated on with every prospect of success. A thick diaphragm may be divided by stellate incisions, and reunion prevented by the temporary or permanent retention of a metal or celluloid tube.

Senile Stenosis seldom induces directly much defect of hearing, but when it does, the so-called "invisible" silver ear-tubes may be worn with advantage. Some benefit may follow the wearing of artificial teeth. The patients are very liable to occlusion by cerumen.

Inflammatory Stenosis from old external otitis yields, to a surprising degree, to dilatation by means of plugs of cotton-wool moistened with the weak solution of sub-acetate of lead. It may be further combated by means of the introduction of leaden tubes or rods. In case of sub-acute infiltration, longitudinal incisions are required.

Periostitic or Hyperostotic Concentric Stenosis requires dilatation, conducted with care not to cause ulceration. *Periostitic swelling due to the extension of mastoid disease*, by caries, or erosion of the postero-superior wall of the meatus, calls for incision and evacuation of the contained pus or cholesteatomatous material, for which the "mastoid" operation may be required.

Exostosis or Circumscribed Hyperostosis narrowing, but not occluding the meatus, is as a rule best left alone in the absence of complications, the patient being instructed to guard against the entrance of water, especially sea-water, into the ears, by avoiding bathing, or by plugging the ears with greased cotton-wool when indulging in it.

Exostosis, when *single*, and occluding the meatus completely, is usually pedunculated, and consequently susceptible of being easily removed. This may be accomplished in a few simple cases by means of a wire snare forced past the tumour, in others by means of a dental forceps or elevator, or (as in a case of Mr. Mark Hovell's) by means of a screw inserted into a hole bored into the growth by the aid of a dental drill.

When the exostoses are *multiple*, complete occlusion is seldom due entirely to the bony outgrowths. They leave an intermediate opening which, under favourable circumstances, permits of the entrance of waves of sound, but this opening is very readily occluded by impacted cerumen, accumulations of desquamated epithelium or inflammatory swellings of the cuticular lining. All that is necessary is then to remove the superposed cause of

obstruction as follows : Small ceruminal masses may be removed by means of a fine blunt hoe, epidermic concretions in the same way, or by means of fine forceps ; or either may be in the first instance softened by the use of glycerine instillations, and then, after twenty-four hours, evicted by means of the fine-tipped syringe. Inflammatory thickening may be diminished and the passage dilated by means of small plugs of cotton-wool moistened with liquor plumbi subacetatis. The co-existing external or median otitis should receive appropriate treatment. Further dilatation by tapering metal or vulcanite rods or tubes may be practised.

Surgical Operation for the Removal of Exostoses should be undertaken under the following circumstances :—

(1,) When the bony growth completely or nearly occludes the ear and produces extreme deafness (not yielding to dilatation), the other ear being quite deaf from the same or some other cause.

(2,) When the growth almost occludes the ear and is complicated with suppurative inflammation of the middle ear, giving rise to signs of retention of pus (pain, fever, etc.). In this latter case it may be advisable to operate simultaneously on the mastoid process.

(3,) When a patient with exostoses is subject to frequent occlusion by ceruminal or epithelial masses or inflammatory swelling, and is obliged to live out of reach of appropriate skilled treatment.

(4,) A cancellous and obviously pedunculated exostosis may be removed, if complicated with frequent occlusion or with otorrhœa.

The operation for removal of exostoses varies according to the density, accessibility, and mode of implantation of the growth.

Cancellous pedunculated exostoses may be removed by means of a dental elevator or forceps, a screw introduced into a hole made with a dental drill (Hovell), or even a simple stout snare (Cook).

Hard sessile growths, if easily accessible, as regards their depth and the width of the meatus, are suitable for removal through the meatus by means of the burr or trephine worked by means of an electric (Dalby) or treadle (Pritchard) motor. Field advises the passage of a steel guard beyond the growth, curved so as to protect the deep structures behind the growth, but when there is room to introduce the guard, the operation is hardly called for. This operation must be performed under general anæsthesia, with good illumination and with an experienced assistant to wipe out the meatus with swabs of absorbent wool. Schwartze prefers the gouge and mallet, but in view of the temporary increase of deafness which he has found to be induced by the concussion of the labyrinth involved in their use, there seems every call for the adoption of the former method whenever practicable.

Growths deeply situated or inaccessible on account of the narrowing of the meatus, require the gouge operation after separation of the auricle and cartilaginous meatus.

Vicarious Menstruation or *Hysteria*, expressing itself by an aural hæmorrhage, calls for attempts to restore the normal discharges and to raise the tone of the nervous system respectively.

Malignant disease of the External Meatus, if circumscribed, admits occasionally of successful removal, whether in the form of a wart-like *epithelioma* or a polypoid *sarcoma*. In inoperable cases antiseptics must be employed. At present the use of the toxines derived from pathogenic cocci is *sub judice*.

AFFECTIONS OF THE MIDDLE EAR.

In *Acute Catarrh of the Eustachian Tube* we have to endeavour to diminish the congestion of that passage, and to restore the ventilation of the tympanum, and for the former purpose we may treat the nasal passages by means of remedies which diminish the turgidity of the mucous membrane. For temporary purposes the application of **Cocaine** is, of course, of obvious palliative value, but its effect is very transitory, and its repeated use highly injurious. A more lasting effect is produced if this is followed up by the application of a watery solution of **Antipyrin**, either in spray or by means of a brush, and for continuous repeated use a spray containing **Eucalyptus**, and **Menthol** dissolved in **Paroleine** may be employed as often as desired. The mouth of the Eustachian tube is very readily reached by means of the nasal spray after the application of cocaine, but also by means of a curved spray or brush passed behind the soft palate from the mouth. After the acute disturbance has passed off it is advisable to make applications to this part of **Chloride of Zinc** (15 grs. to the ℥). To restore the ventilation through the tube, some form of inflation is further required, as the "self-inflator" ("Med. Ann.," 1892, p. 205), Valsalva's, or Politzer's method, or, if these fail, the use of the Eustachian catheter. These methods of inflation should be left off as soon as normal hearing is restored, or as soon as they cease to bring about further improvement.

Acute Catarrh of the Middle Ear.—For the pain the greatest relief is given by warmth in the form of fomentations and irrigations, also by the instillation of sedative drops of cocaine, morphia, belladonna, or opium, and the application of a pad of wool over the ear, on which is poured a small quantity of chloroform. If the pain is very severe, leeches may be applied over the tragus. If this does not relieve, and there is a livid protuberance of the membrane, especially with a yellowish green colouration of the bulging part, paracentesis is required.

In general, aperients are advisable, and antipyrin (grains 10) or phenacetin (grains 5) every three or four hours, or tincture of aconite in frequently repeated small doses. The patient should be kept in a warm room, and, if necessary, with the head wrapped up in flannel.

Acute Suppurative Inflammation of the Middle Ear.—In this, which corresponds to the more severe stage of the former, the same treatment is applicable, in particular, leeching, application of warmth to the ear, cocaine instillation, and paracentesis, with a plain or shouldered knife (*Fig.* 7). If there is deep-seated pain, cold must be

Fig. 7.

applied to the mastoid. If, after the occurrence of perforation, pain persists or returns, one or other of the following may be necessary: Enlargement of the perforation, irrigation through the Eustachian tube (p. 256), operative treatment in the mastoid region. When perforation has taken place, the discharge has to be removed several times a day, according to the rapidity of its accumulation. If it is very copious, syringing must be adopted with unirritating, sterile, or antiseptic liquids (boiled water alone or with ·5 per cent. common salt or Glauber's salt, or 3 per cent. boric acid). If moderate, it may be removed by means of swabs of absorbent wool. After each cleansing a few grains of powdered boracic acid should be insufflated, and a pledget of wool or iodoform gauze introduced into the meatus. The procedure should be repeated as soon as the discharge soaks through the plug. Irritation of the meatus should be combated by the application of a weak, white precipitate and zinc ointment. If the powder tends to cake and block up the passage so as from retention to cause pain or fever, a saturated solution of boric acid in water may be employed as "drops."

Tuberculous Median Otitis calls locally for irrigation with a 1 in 4,000 solution of biniodide of mercury, followed by insufflation of iodoform powder. Constitutional treatment, by means of cod-liver oil, creasote, or guaiacol, and suitable climate and hygiene, is to be carried out. Extension to the bone generally supervenes, and may require surgical treatment.

In *chronic catarrh of the middle ear of the exudative form*, in which there is concomitant catarrh of the Eustachian tube, treatment for the latter has to be carried out, but the causes of the chronicity are to be further sought for and rectified. The naso-pharynx calls for the chief attention, and it is necessary to make applications of astringents to that cavity in case of congestive conditions, or to remove adenoids,

polypi, or other growths. Obstructions of the nose proper may also require removal, but it may be taken as a rule that where inflation of the tympanum produces little or no improvement in the hearing, the greatest caution must be observed in holding out any hopes of benefit from nasal operation. Under the opposite circumstances, the most brilliant and lasting results may often be looked for. Should the narrowing of the Eustachian tube not yield to the above treatment, it may be necessary to resort to the intra-tubal application of astringents, or emollients and antiseptics, or to the use of the Eustachian bougie for purposes of vital or electrolytic dilatation.

In *relaxation of the membrane* two objects are to be striven after. First, removal of the narrowing of the Eustachian tube, and second, the local diminution of the relaxation. For the former, we must very cautiously practise inflation, but it is obvious that too great energy in this direction would necessarily increase the relaxation, therefore our chief dependence is upon the application of astringents, and the employment of bougies. To diminish the local relaxation, the most practicable method is the application of collodion, or, under favourable circumstances, the performance of multiple incisions, or multiple cauterizations of the relaxed membrane. The collodion treatment is, however, the one to be most recommended. In some cases the application of an artificial drum produces considerable benefit.

In chronic catarrh of the sclerotic form, our resources are of the smallest. If, as is typically the case, inflation does no good, it inevitably does harm, because the fixation of the stapes being due to a primary thickening of its ligaments, and not to indrawing of the membrane from want of ventilation, inflation can only tend to cause, on the one hand, relaxation of membrane, and, if possible, increased pressure on the stapes and the membrane of the round window. Rarefaction of the air in the external meatus is often of undoubted value when practised by means of Siegel's speculum, Delstanche's rarefacteur, or the writer's Eustachian inflator, the nose-piece being put into the ear and suction practised by the mouth.

Abnormal fixation of the larger ossicles may be more or less affected by pressure with an ordinary probe tipped with cotton-wool or Lucæ's spring probe, which is supposed to modify the pressure exerted by the practitioner's hand. Intra-tympanic injection of paroleine, or some other form of liquefied petroleum, has frequently produced beneficial results. All the above measures should be freely employed, and in exceptional cases it is advisable to practise experimently paracentesis of the membrane (tympanotomy), section of the posterior fold, and less readily mobilization of the stapes, section of the tensor tympani, or even

removal of the entire membrane and larger ossicles. These operations have a much more hopeful sphere in case of the adhesive conditions following definite inflammatory or suppurative disease.

The following GENERAL HYGIENIC AND THERAPEUTICAL INDICATIONS should be attended to: The avoidance of exposure to cold or wet, such as in males after swimming, and in females after washing the head. Residence at a high altitude is advisable, and avoidance of worry and dietetic, alcoholic, sexual, or other irregularities. As regards internal medication, indications of the syphilitic or gouty diathesis should be appropriately treated, and even in their absence, occasional good, especially in the presence of arterial tension, follows the administration of small doses of **Grey Powder** or **Calomel.**

Chronic Suppurative Inflammation of the middle ear.—This is first to be treated by cleansing and antiseptic syringing with solution of bicarbonate or sulphate of soda, followed by drying with absorbent wool and the instillation of "drops" of saturated solution of boric acid. The ear is to be gently closed with clean antiseptic wool. The various causes of chronicity should be sought for and, if present, treated as follows:—

Polypi should be excised by means of a cold snare after thorough antiseptic cleansing of the ear. After their removal, instillation of alcohol "drops" (p. 256) should be regularly practised. Any stump remaining may be scraped away with the ring knife (*Fig.* 8), and then

Fig. 8.

cauterised with the strong solution of perchloride of iron or the galvano-cautery.

Granulations when very prominent may be snared or curetted, but they may also be successfully treated by the application of perchloride of iron or chromic acid and alcohol instillations.

Attic suppuration calls for thorough irrigation, removal of pus by the cautious use of the intra-tympanic syringe (remembering the possibility of the presence of carious openings in the tegmen tympani), suction by means of Siegel's speculum, the insufflation of iodoform or boracic powder in small quantity, and, these failing, the removal of ossicles, and ultimately the free opening of the mastoid antrum, and the attic (Stacke's) operation.

Caries of the Malleus or Incus sometimes ceases to keep up the discharge if the granulations are cauterised, and the opening in Shrapnell's membrane is washed out with boro-boric lotion by means of Milligan's intra-tympanic syringe, and boric acid or other antiseptic powder is introduced. If not, the ossicle may advantageously be removed, more

especially if the hearing power is so much reduced that the removal of a portion of the tympanic mechanism cannot make it worse.

Caries of the Temporal Bone.—The granulations have to be scraped away, any loose crumbs of bone removed, and antisepsis striven for by syringing with 1 in 4,000 solution of biniodide of mercury and insufflation of iodoform or iodol. Constitutional dyscrasiæ require special attention. All these means failing, operative removal of the diseased portion of bone is required.

Disease of the Mastoid Antrum calls for operative opening of that cavity, if with the persistent discharge there is pain and pyrexia, or, if other means fail, even in the absence of these.

Cholesteatoma calls in the first instance for asepsis and dryness. These are best obtained by the use of alcoholic drops with or without perchloride of mercury. The ear may be syringed with soda, then carefully dried by means of absorbent wool, after which alcohol drops, to dehydrate, are to be instilled *(vide* p. 256*)*.

Disease of the Naso-pharynx calls for treatment *secundum artem*, such as removal of adenoid vegetations after the use of antiseptics in the ear, application of astringents by means of a curved brush or wool holder, the facilitation of nasal respiration by removal of nasal polypi, septal, turbinal, or other obstructions, the removal of sources of suppuration in the proper or accessory cavities of the nose, involving the use of the posterior and anterior douche, etc.

Constitutional dyscrasiæ require each their special treatment. Thus: In *tuberculosis*, cod-liver oil and malt extract, creasote, guaiacol, small doses of iodoform internally etc.; in *syphilis*, iodides, mercury, opium, cod-liver oil, etc.; in *Brights' disease*, suitable hygiene, milk diet, iodide of potassium, etc; in *anæmia*, iron, chloride of ammonium, good food, wine, fresh air; in *diabetes mellitus*, in which osseous disease of the petrous bone works rapid destruction, appropriate diet and medicines.

Deeper extension of the disease is probable when pain frequently occurs in cases of established chronic suppuration of the middle ear, in which case *confined suppuration* is to be treated by syringing with soda or boracic solutions by means of the ordinary syringe, or into the collateral cavities by means of Hartmann's or Milligan's intratympanic syringe. It can also be sucked out by the use of Siegel's exhausting speculum, after which powders should be blown into the collateral and main cavities, the best being boracic acid or iodoform.

Caries of the Temporal Bone, with pain, calls for careful removal of polypi and granulations after thorough antiseptic irrigation through the meatus, and advisably also through the Eustachian tube, cold application to the mastoid, and rest in a warm room.

Cholesteatoma calls for dry mopping, the instillation of alcohol drops, local and general warmth, and rest, the avoidance of syringing unless there is an excess of secretion, and unless the most thorough drying can be practised afterwards. Operation is urgently called for, unless the symptoms yield to the treatment above described.

Erosion of blood vessels, giving rise to severe hæmorrhages in advanced cases of disease of the temporal bone, may threaten life. Digital compression of the common carotid artery may secure temporary safety if the hæmorrhage is arterial, and ligature may be later required. Plugging the tympanum and meatus with iodoform gauze may be effective in venous and in slight arterial hæmorrhage.

The *Residua of Suppurative Inflammation of the Middle Ear*, taking the form of perforations, cicatrices, or adhesions, may be treated as follows :—

A *persistent perforation* does not necessarily interfere materially with the hearing power, but the extent to which it does so may be measured by the degree of improvement following the application of a moist flat pledget of cotton-wool over the perforation. Should the improvement then be very considerable, resort may be had to the continuous use of this appliance. When moistened with watery solutions it is apt to re-awaken the suppuration, and it therefore is advisable to employ liquid vaseline, or paroleine. If the meatus is large, it may be advisable to try to close the opening by means of egg-shell membrane, as taught by Berthold.

When there is a considerable loss of substance in the antero-inferior portion of the membrane, the fibres of which normally oppose the indrawing action of the tensor tympani, it is often desirable to perform tenotomy of that muscle for the relief of the deafness, tinnitus, or vertigo, which this abnormal indrawing is apt to cause.

Cicatrices.—When non-adherent they should be blown out by tympanic inflation, or sucked out by means of Siegel's speculum, after which, they should be painted with collodion, or treated by the other methods recommended for relaxed membrane. When partially adherent, forcible inflation or suction is sometimes successful in detaching them, but when completely adherent there is very little to be done, except to remove the epidermic concretions which are apt to form in their depressions. It is often quite justifiable to cut through bands which favour the retention of such collections, or which hamper the movements of the stapes and incus. An artificial cotton-wool drum should then be applied *secundum artem.*

DISEASES OF THE MASTOID PROCESS.

Mastoid Adenitis.—The irritating cause, frequently an affection of the scalp, eczema, pediculi, etc., must be removed, warm boric fomentations applied, and an incision made if fluctuation is present.

Mastoid Periostitis calls for the application of cold, and leeches, incision if necessary, and internally iodide of potassium.

Sub-Periosteal Abscess.—Free opening with careful antiseptic precautions, in view of the possible communication with the cranial cavity, or even with the brain itself. When a counter opening is necessary, this should be made in the roof of the meatus when the abscess is at the level of the upper part of the auricle, but over the mastoid process if it is below this.

Cortical Mastoiditis calls for paracentesis of the membrane (p. 267), unless there is already a sufficient perforation, Eustachian irrigation (p. 256), the application of cold and leeches. The cortical cell should be opened into, by means of gouge and chisel, under the following circumstances: First, if there are pain and fever, with persistence of otorrhœa, exacerbations and meningeal irritation or vomiting; and second, if the patient has been ill for more than ten days.

Suppuration in the Mastoid Antrum.—Cold should be applied to the mastoid, and antiseptic irrigation of the ear should be practised. When cold ceases to give relief, warm applications must be substituted, and under the following circumstances the mastoid antrum must be opened by operative measures: First, when there is infiltration of the mastoid and of the meatus along with meningeal symptoms; second, when there is pain with bulging of the postero-superior wall of the meatus; third, when there is pain in the mastoid without swelling, without visible hindrance to the flow of discharge from the tympanum, along with tenderness of the mastoid.

Mastoid neuralgia may be treated in the first instance by counter irritation, but if this fails, the chiselling away of a small shaving from the surface of the bone is to be practised.

THE DANGEROUS SEQUELÆ OF SUPPURATIVE INFLAMMATION OF THE MIDDLE EAR.

Cerebral and Febrile Disturbances arising in association with ACUTE *Inflammation of the Middle Ear* call for paracentesis of the membrane, boracic irrigation through the Eustachian tube (p. 256), and the application of cold to the mastoid, along with appropriate derivative treatment. Should relief not be speedily obtained (the possibility of

suppuration, confined to the attic, being kept in view), the mastoid region should be explored, and treated as before described, in the hope of preventing the evolution of meningitis or pyæmia.

Acute Meningitis.—The classical treatment, including shaving of the head, the application of the ice bag, aperients, calomel in large doses, special attention to the treatment of the tympanic diseases, the administration of bromide, and, cautiously (so as not to mask the symptoms), small doses of morphia.

Pyæmia.—The removal of the tympanic cause is a primary indication; incision, antiseptic irrigation, general warmth and rest. Internally, salicylate of soda or quinine with ammonia, and alcohol in case of great prostration. Metastatic inflammations should be treated first by the application of cold, and if this is insufficient, antiseptic evacuation of the pus.

In association with CHRONIC *Suppuration* both meningitis and pyæmia may arise, calling for the above-mentioned treatment, but when associated with chronic disease of the middle ear, meningitis may be of such a localised nature as to afford hope of benefit from operation.

Antral Mastoiditis calls for exploration, if the pain is not speedily relieved by the application of cold and the methods of irrigation of the tympanum already described. In case of cholesteatoma the opening should be a very free one, and permanent.

Extra-dural Abscess.—This calls for removal of the tympanic cause, exploration of the antrum, and for enlargement of the opening by means of Hoffman's forceps (Dean), a burr (Macewen), or the trephine, so as to permit of free cleansing of the space which may be over the roof of the tympanum, or in or about the groove for the lateral sinus. The part should then be freely dusted with iodoform, which may be combined with 2 or 3 parts of boracic acid.

Sinus Phlebitis.—The opening made for the exploration of the antrum should be enlarged, the sinus incised, clot and *débris* removed, boracic acid and iodoform insufflated, and the walls of the sinus compressed by means of iodoform gauze and bandage. In this way the sigmoid sinus may be obliterated. If there is evidence of extension of the suppuration down the internal jugular vein, this vessel should be ligatured (Macewen), and probably whether or not (Horsley, Balance, Lane).

Cerebral Abscess.—The temporo-sphenoidal region having been explored after enlargement of the opening previously made, and pus revealed by means of the exploratory cannula, the opening should be enlarged by means of dressing forceps, and sloughs, if any, should be

removed. Irrigation by means of a two-way cannula, with boric lotion, should then be practised. If the abscess has a thick wall, a drainage tube should be introduced, otherwise none at all. An absorbent antiseptic dressing should be applied, and the patient placed so that drainage by gravitation is favoured.

Cerebellar Abscess.—The cerebellum may be exposed by enlargement of the aperture in the bone downwards and backwards by means of Hoffman's forceps, or a fresh trephine hole may be made 2 inches behind the centre of the osseus meatus, and 1 inch below Reid's base line.

The details of these serious though life-saving operations must be studied in the writings of the authors already mentioned, and in the exhaustive treatise of Macewen. In general, it may be stated that full advantage must be taken of the principles of antiseptic and aseptic surgery, and that there is great advantage in the use of a large flap operation, drainage being effected through a small opening made at the appropriate part of the base of the flap.

DISEASES OF THE INTERNAL EAR, AUDITORY NERVE, AND CENTRES.

Hæmorrhagic effusion into the labyrinth calls for functional and bodily rest and quiet, the administration of **Bromide of Potassium,** and as soon as the mental disturbance has passed off, the administration of **Pilocarpin** by subcutaneous injection (*vide* p. 255). If after a fortnight there seems to be no improvement in the hearing, and the giddiness persists, especially if to such an extent as to be of more account than the deafness, **Quinine** should be administered dissolved in **Hydrobromic Acid.**

Acute Congestion of the Labyrinth calls for vigorous catharsis, the application of cold (ice bag) to the head, and depletion by means of leeches over the tragus, or puncture of the inferior turbinated body of the same side; internally, the administration of bromide of potassium in large doses.

Chronic Congestion calls for bromides, aperients, occasional depletion by leeches, or puncture of the turbinated bodies, and when the latter are inordinately large, by their removal (Carmalt Jones).

Care should be taken not to adopt such measures in cases where the symptoms are really due to *anæmia* in which, on the other hand, stimulants and ammonia and strychnia are called for.

Acute Anæmia calls, as above mentioned, for stimulants, and, of course, attention to the primary cause.

In *Chronic Anæmia* the prognosis is worse than might be expected

but the best results are obtained by general supportive measures, and the administration of **Strychnia,** or **Tincture of Nux Vomica** in full doses (Shield).

Acute Labyrinthitis, when *simple*, is treated as directed for congestion, with the addition of pilocarpin injections, as soon as the acute general disturbance has passed off. In the *infectious* cases this treatment is also called for, but the pilocarpin cannot be employed until the patient's general strength has returned. In the *meningitic form* iodides and mercurials along with the pilocarpin offer the best chance of benefit, and in the *traumatic* form the damage to the delicate structures leaves little hope of improvement being effected, though the writer believes he has seen the vertiginous disturbances checked in such cases by the long continued administration of small doses of the perchloride of mercury.

For *labyrinthine disease originating in chronic catarrh* of the middle ear, the treatment—albeit a meagre one, is that already indicated. A catarrh of the middle ear *super-added to a primary nerve deafness* calls for the same treatment as if the nerve deafness were absent, the treatment of the nerve deafness (strychnia, etc.,) being continued.

In *exhausted suppurative disease of the labyrinth secondary to suppurative inflammation of the middle ear*, curative treatment is not to be thought of, and attention is to be chiefly directed towards preventing a re-awakening of the suppurative disease by the avoidance, first, of the entrance of water into the ear, and, second, of microbic invasion : lastly, by the sustenance of the patient's general health in every possible way.

Acute Syphilitic Disease of the Labyrinth in the *secondary* stages is to be treated by means of **Mercurials** and **Pilocarpin** injection (*vide* p. 255). In the *tertiary* stage **Mercurial Inunction** and **Iodide of Potassium** are our chief remedies, but if the case is comparatively recent a course of hypodermic injections of pilocarpin may be instituted, though only experimentally, and with a perfect understanding on the part of the patient that the beneficial result is extremely doubtful. In the *hereditary* forms all treatment is singularly ineffectual, but if the case is seen at the onset counter-irritation behind the ear is to be practised (Pritchard), moderate doses of combined mercury and iodide of potassium are to be administered, the greatest attention being directed towards the maintenance of the general nutrition of the patient by means of food, cod-liver oil, malt extract, etc. In otherwise fairly robust subjects, a tentative course of pilocarpin (McBride) may be cautiously administered. Ultimately the treatment may well be confined to the administration of full doses of the syrup of the

iodide of iron, and it should never be forgotten that there is often a concomitant catarrh of the middle ear, attention to which adds materially to the value of the patient's hearing power.

Concussion of the Labyrinth from Sudden Loud Sound or Explosion is sometimes relieved by energetic rarefaction of the air in the external meatus, when the condition is recent, but when the deafness is extreme and of old standing, no good result is to be anticipated from treatment.

In *Paresis from continued concussion*—"boiler-makers' deafness," "occupation deafness"—the ears must be protected by plugging with cotton-wool when exposed to noises, and where possible, such a change of habit or occupation should be made as to permit of the avoidance of such exposure. In these cases a cautious use of the constant galvanic current seems to be advantageous (Lewis Jones).

Involvement of the intra-cranial portion, by Syphilitic Tumour or Pachymeningitis, calls for energetic use of anti-syphilitic remedies, which would also be employed for therapeutic or diagnostic purposes in the case of pressure by any *tumour* of doubtful nature.

In *disease of the auditory nerve due to Basal Meningitis*, absorbent remedies, mercury, and iodide of potassium, are again called for, and in view of the probable implication of the labyrinth, pilocarpin is advisable in recent cases.

Evidence of *disease of the deeper nervous centres* would call for their appropriate treatment, apart from otological considerations.

In *Tubercular Disease of the auditory and facial nerves* in the petrous bone, the removal of granulations and other obstructions to the exit of discharge is primarily indicated. The nutrition of the facial muscles must be kept up by means of galvanism, and if the patient's general condition does not contra-indicate it, operative measures must be undertaken for the removal of the diseased tissue.

In *Hysterical Deafness*, general treatment, suitable for that condition, is called for, and stimulation by means of the continuous galvanic current should be practised. Hypnotism has been recommended, and in cases where the deafness is accompanied by, or due to lateness in the onset of the menses, endeavours should be made to hasten their occurrence.

Toxic Paralysis, when recognized, calls for avoidance of the injurious drug, and in the case of quinine or salicin, the administration of bromide of potassium or hydrobromic acid. The writer has in two cases been inclined to attribute the nerve deafness to the absorption of nitrate of silver employed as a hair-dye. (In each case the advice given was so unpalatable, as to deter the patient from returning to report the result.)

Sympathetic Paralysis calls for energetic treatment of the opposite ear, even though there is little hope of restoring its function. It is in such cases that tenotomy of the tensor of the primarily affected tympanum is of importance (Cholewa and Urbantschitsch).

Senile Deafness admits of little benefit from treatment beyond the administration of nerve tonics, and is apt to be made worse by energetic local treatment.

N.B.—It is to be noted that in the severest forms of nerve-deafness benefit has been known to be derived from "acoustic exercises," and that in otherwise hopeless cases instruction in "lip-reading" is of great value, while "speaking-trumpets," judiciously selected, afford great assistance.

NEUROSES OF THE EAR.

Otalgia, when *reflex*, calls for removal of the local cause, particularly the removal of a tooth or the exciting diseases in the throat, tongue, etc. When *not reflex*, protection from cold, and in periodic or malarial cases, **Quinine** or **Tincture of Eucalyptus**; in syphilitic cases, **Iodide of Potassium**; in gouty or rheumatic cases, **Iodide of Potassium, Salicylate of Soda**; in anæmic cases, **Iron** and **Ammonia**.. When the pain is in the superficial cervical plexus, the constant current (anode) may be applied, and when it is deeply situated in the tympanic plexus, the Eustachian bougie (Urbantschitsch) has been empirically found useful, a fact corroborated by the writer's own observation. The cataphoric employment of **Cocaine** is recommended by Masini, a small quantity of a 10 per cent. solution being introduced into the auditory canal while a feeble continuous current (anode) is passed through it.

Functional and other Paralyses have been referred to above.

TREATMENT OF DISEASES CHARACTERISED BY NOISES IN THE HEAD.

The conditions producing defect of hearing, when present, are to be treated as laid down in the foregoing paragraphs.

Arterial Congestion of the Middle or External Ear calls for the application of cold, depletion, derivation to the intestines, and the treatment otherwise appropriate in acute inflammatory affections of the parts according to circumstances.

Arterial Congestion of the Internal Ear, as such, yields most readily to aperients and bromides, gouty cases to colchicum, iodide of potassium, and milk diet. Renal and other factors must be combated, including mental over-exertion and anxiety. Relief is often afforded by

compression of the vertebral arteries by means of the fingers ("Med. Ann.," 1894, p. 207), or of small conical pads placed in the suboccipital triangles, and firmly secured by a strap passing round the forehead.

Intracranial Aneurism from rheumatic endocarditis is usually on the internal carotid or middle cerebral artery, and may call for ligature of the common carotid. When of syphilitic origin it is more likely to affect the basilar or vertebral artery. Compression of the vertebrals might in such cases be of service.

Noises arising from *Increased Tension of the Tympanic Structures* call for treatment of the cause, as in Eustachian obstruction (p. 266), restoration of the patency of the tubes, treatment of the nose and naso-pharynx, etc, ; in chronic non-suppurative catarrh of the middle ear, experimental tympanotomy, etc. (p. 267) ; in residua of suppurative inflammation, the section of tight bands and adhesions, tenotomy of the tensor tympani (in permanent perforation). In relaxation of the membrane or of cicatrices, collodion (p. 268), multiple incisions or cauterisations, etc., along with dilatation of the Eustachian tube.

Tinnitus from *venous congestion* calls for aperients, bromides, the evacuation of blood by incision of the inferior turbinated bodies, or their excision. Obstructions to the return of venous blood, glands, goitres, narrowings of the nasal and respiratory passages, cardiac and hepatic insufficiency, etc., call for attention.

Tinnitus from *anæmia* requires the classical hæmatinic treatment.

Contraction of the tensor tympani is usually reflex, and such causes as irritation in the external meatus, middle ear, teeth, nose, or throat, must be looked to.

Auditory Illusions call primarily for the removal of diseased conditions, catarrhal or otherwise, of the organs of hearing occasioning simple tinnitus. In the second place, the neurotic state which allows of the misinterpretation of the phenomenon must be combated by the treatment for insanity whether in its liminal or its established stage.

Noises accompanying *abnormal acuteness of hearing* call for nervine sedatives or tonics according to circumstances, and by diversion of attention from the organs of hearing, change of occupation, rest, recreation, etc.

With *painful hearing* (odynacusis) the wearing of wool in the ear is to be recommended. Local (inflammatory or otherwise) and general causes of increased sensibility are to be removed.

Nervous Tinnitus with normal hearing or very slight nerve deafness, apart from evidence of cortical cerebral disturbance (auditory aura in epilepsy from disease of the auditory cortical centre), calls for removal of the condition of the nervous system giving rise to it. In this affec-

Fig. A.

Fig. E.

Fig. B.

Fig. F.

Fig. C.

Fig. G.

Fig. D.

Fig. H.

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tion the judicious application of the continuous galvanic current is beneficial.

Auditory Hallucinations call for the care of the alienist rather than the otologist.

THE TREATMENT OF DISEASES CHARACTERISED BY VERTIGO.

Effusion into the Labyrinth (Ménière's disease).—As already pointed out (p. 274) rest, quietness, administration of bromides, derivation to the feet and intestines, cold to the head, etc., are necessary at the time of the attack. Persistence of deafness in particular calls for a course of pilocarpin (p. 255), vertigo for small doses of quinine.

Congestion of the Labyrinth demands similar treatment along with local depletion from the tragus or turbinated bodies (p. 274), and attention to inflammatory conditions of the neighbouring brain and middle ear, as well as to any co-existing neurotic state.

Anæmia of the Labyrinth, as before mentioned, is to be treated with stimulants, ammonia, large doses of strychnia; losses of blood or other sources of weakness being prevented.

Acute affections of the labyrinth are to be treated as set forth on pp. 274-275.

Aural Vertigo, chronic or habitual, in spite of the above treatment, and of such severity that any increase of the deafness or tinnitus becomes of minor importance, may be treated by means of sulphate of quinine, in doses of as much as 15 grains in the day.

"*Pseudo-Ménière's Disease*," or vertiginous attacks arising from middle-ear disease, requires both local and general treatment. When occurring as the result of *suppurative otitis* and during an acute attack, or an acute exacerbation of a chronic affection, the treatment appropriate for these is indicated. A *granulation* pressing on the stapes may have to be removed. *Residual bands* resulting from an exhausted inflammation may require to be severed. The un-opposed *over-action of the tensor tympani* may call for tenotomy. When produced by *non-suppurative otitis media*, of the exudative form, attention to the naso-pharynx and Eustachian tube effects complete cure in the less typical cases. When tympanotomy gives relief, the extraction of the incus in presence of severe symptoms is justified by published cases (Chas. H. Burnett). In the sclerotic form attacking the stapedio-vestibular articulation, the attacks may be the most typical of "Ménière's disease" (Gradenigo, Gellé). Catarrhal conditions of the tympanum, and particularly of the naso-pharynx, should be thoroughly treated. Further undue irritability of the nervous system,

so often at fault in cases of vertigo, should be allayed by means of bromide of potassium, arsenic, etc. In "Pseudo-Ménière's disease" from any of these causes the effect of moderate doses of **Quinine** is extremely beneficial, so far as the symptoms of vertigo are concerned.

The treatment of *vertigo* arising from *epilepsy*, *laryngeal irritation*, *ocular affections*, *locomotor ataxia*, *cerebral disease*, *gastric disturbance*, *arterio-capillary fibrosis*, and *cerebral disease*, is beyond the scope of this article, but too much stress cannot be laid upon the necessity for the administration of purgative doses of calomel (Mackenzie) whenever, with the threatening of vertiginous attacks, there is evidence of concomitant heightening of arterial tension.

Explanation of the Coloured Plates.

PLATE VII.

A.—Appearance of the membrana tympani in the earliest stage of acute inflammation.

B.—The same a few days later in a severe case simulating a polypus bathed in pus—really a bulging of the postero-superior segment.

C.—The same after the removal of the pus by means of a cotton-wool swab.

D.—The same a few days later (paracentesis having been performed), the comparatively normal antero-inferior segment being perceptible.

E.—A frequent appearance showing a relaxed and indrawn cicatrix moulded on the incudo-stapedial articulation, the result of the disease above illustrated.

F.—A residue of suppurative inflammation of the middle ear. The membrane is almost entirely gone, and there is a cicatrix adhering to the inner wall of the tympanum, but leaving an opening into the passage to the antrum hidden by a yellowish crust.

G.—The same on suction being practised by means of Siegel's exhausting speculum, a large drop of pus being drawn out, relieving the pain and improving the hearing.

H.—The appearance after the removal of the pus.

PLATE VIII.

I.—Appearance in a case of intense deafness for which pilocarpin had been injected, and change of climate recommended. There is a sunken cicatrix over the stapes occupied by a cheesy mass and leaving an opening into the passage to the antrum.

J.—The same after suction by means of Siegel's speculum, and cleansing by means of Milligan's intra-tympanic syringe. The discomfort was then entirely removed, and the application of a cotton-wool pad moistened with paroleine led to such restoration of hearing as to admit of the patient

Fig. I.

Fig. M.

Fig. J.

Fig. N.

Fig. K.

Fig. O.

Fig. L.

Fig. P.

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returning to business. To prevent re-development of the cheesy mass "alcohol" drops were ordered.

K.—A bridge running from the posterior border of the adherent manubrium to the margin of the tympanic ring, retaining a mass of epithelial *débris* which hampered the movements of the stapes and greatly reduced the hearing-power.

L.—The appearance after removal of this bridge, allowing of the escape of epithelial scales and of the free movement of the stapes so as to improve the hearing very considerably.

M.—Whitish "skin" protruding downwards from the attic, the membrane being almost entirely destroyed in the course of chronic suppuration, indicating the presence of a cholesteatoma in the attic. Operation being declined the growth is kept anhydrous by means of "alcohol" drops, and the symptoms, under surveillance, kept in abeyance.

N.—The meatal swelling seen in a case of acute circumscribed external otitis.

O & P.—A very extreme case of exostoses in the meatus, in which the hearing was only occasionally interfered with on the occurrence of superposed external otitis.

Synopsis.—(Vol. 1895, pp. 37 and 217, 221.) **Naphtholate of Sodium**, antiseptic in ear diseases. Methodical diagnosis of, *see* p. 196. Abscesses in the external meatus treated by introduction into the external meatus of an india-rubber tube, and after some days a plug of **Iodoform Gauze** to maintain dilatation and ensure antisepsis. Treatment of external otitis by plugs of cotton dipped in warm **Goulard's Solution**. Sclerosis of middle ear treated by **Paroleine** or **Liquid Vaseline** introduced through the Eustachian catheter. **Menthol and Camphor** may be added to the liquid. Seiss freezes the skin over the branches of the post-auricular and stylo-mastoid arteries with **Chloride of Ethyl** to relieve the tinnitus of sclerosis. Lucae's spring pressure probe is useful, its end being dipped in freezing solution before use. **Massage and Passive Movement** of membrane and ossicles by Delstanche's raréfacteur and Siegel's pneumatic speculum. Kirchner's instrument for gymnastics of the drum and ossicles. Blake prefers a curette, and Macewen a dental burr in mastoid operations. Reinhardt advocates a persistent opening in the mastoid after removing cholesteatomata. Phlebitis of lateral sinus treated by Macewen by opening antrum and tympanum and exposing sigmoid sinus by use of a burr behind posterior wall of antrum, enlarging the aperture, scooping out purulent contents if sinus is perforated, and obliterating sinus by induplication of the walls. **Powdered Boric Acid** and Iodoform are used and the wound stuffed with **Iodoform Gauze.** *Aural Vertigo.*—Acute attack demands recumbency, **Bromide of Potassium**; and in gouty cases, **Bromide of Lithium**, and also **Salts of Potassium, Colchicum,** and **Salicylate of Soda**, especially useful if preceded by a **Mercurial Purge.** **Counter-irritation** behind the ear; **Quinine** in the intervals, or **Salicylate of Soda**; **Pilocarpine** hypodermically. **Blue Pill** or **Calomel** to subdue arterial tension.

EAR DISEASES (Cerebral Complication of). (See "Brain, Surgery of.")

ECZEMA. *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

Bulkley[1] recommends the use of **Alkalies** to overcome the acidity of the blood, and the cautious use of some modern drugs. He protests against the senseless use of arsenic. He avoids irritating ointments. In his experience, local treatment is less important than the alteration of inappropriate diet or some errors in habits.

Thibierge[2] warns against sea baths in moist eczema, lichen, etc., while certain dry eczemas do well with them.

Venturini[3] reports from Pelizzari's clinic on eighteen cases of eczema treated with intra-muscular injections of the **Ammonio-citrate of Iron.** All of them improved rapidly after twenty to thirty injections. In psoriasis, the results were nil.

Steurer[4] recommends a 10 per cent ointment of **Thioform** in weeping eczema.

Coffin[5] treats eczema with **Gutta Percha Paper,** the object being to shut off the air. The part is first dressed with weak **Boric Lotion,** and changed twice a day. When weeping has ceased some other method must be adopted.

Heller[6] read a paper on **Thiol,** a drug very similar to ichthyol in composition, but almost deficient in smell. While useful in many conditions, he considers it most indicated in eczema. He treated some cases, half with thiol, half with ordinary ointment, and convinced himself that the results of thiol were the better. It may be used to the strength of 2 to 15 per cent. in an ointment, or in 50 per cent. solution. Its miscibility with water is an advantage. He has occasionally seen irritation, but this is not common.

Stillmark[7] describes those cases of eczema in doctors, caused by the application of antiseptics.

One found the itching best arrested by **Hot Water,** while another preferred **Ice.** Still another found most relief from **Powder,** and the exclusion of air. A very useful application for surgeons is to apply to the affected skin the **White of Egg.**

Braun[8] refers to the difficulties of treating seborrhœic eczema of the head and face. He has, however, got good results by washing with the following :—

℞ Sulphur	12	Aq. Calcis	
Camphor	1	Aq. Rosæ āā	100
Mucilage	6		

He then goes on to discuss eczemas of the palms, which go on to callosities and fissures. For this he recommends **Caustic Potash** (1 to 2). The same remedy is, he thinks, of value in eczemas of the scrotum

and perineum. It induces considerable acute inflammation, and if itching returns he applies **Wilkinson's Sulphur Ointment.**

Seborrhœic Eczema of the Eyelids.—Leloir[9] recommends, in the milder cases, washing with a weak solution of **Resorcin**, and the application of **Resorcin, Zinc**, or **Mercurial Ointment** ; where there is more suppuration, **Sulphate of Copper,** mitigated **Caustic** and **Alum** ; and, most important of all, no work by gas-light and plenty of fresh air.

Eczema of the External Meatus.—Hermet[10] notes correctly that this is by no means uncommon, and is, moreover, occasionally accompanied by very irritating and painful furuncles. His method of treatment is a syringing of the ear with **Warm Water,** and then the application of a 10 per cent. solution of **Nitrate of Silver** on a plug of wool. The results are rapid.

Eczema of the Ears.—Chatellier recommends washing with a **Sublimate Solution,** and the free dusting of the parts with finely powdered **Iodol.**

Lockwood[11] reports on the treatment of eczema capitis by the internal use of **Salicylate of Soda.** While his reasonings as to the share of uric acid in the production of eczema of the scalp are none too convincing, there appears to be some reason to believe that salicylate has a distinct influence on certain skin diseases. Dr. Haig has also tried the same method with some success. (*See* under " Psoriasis " for further particulars.)

Trosseau[12] has faith in antiseptics in the treatment of eczema palpebræ. He notes that it is of great importance to cure the " eczematous conjunctivitis which always accompanies the affection." For this he uses a weak solution of **Sublimate.** Ointments are only to be employed at the terminal stage, when desquamation appears.

Seborrhœic Eczema in Children.—Feulard[13] lays great stress on diet, which should be limited to milk, with the addition, in older children, of eggs. After the removal of the crusts he uses **Compresses soaked in Resorcin** (6 to 1000) ; at night an ointment of one part of **Balsam of Peru,** 1 to 30 in **Vaseline.** Recovery is rapid. **Thyroid Gland** has been used in some cases of chronic eczema with advantage, but in very many cases it is useless, and in others it is distinctly injurious.

The following are prescriptions which will be found useful in certain cases of eczema ; they are taken from the " Practitioner."—

Paste for Eczema :—

℞ Acid. Salicyl.	ʒj	Pulveris Amyli	ʒiv
Zinc. Oxidi	ʒiij	Adipis Lanæ Hydros	ʒj

For Chronic Eczema of the Legs :—

℞ Ung. Zinci Ung. Hydrarg.	Ung. Plumbi Acet.	āā

For Eczema Seborrhœic :—

℞ Acid. Salicyl. Resorcini	Sulph. precip., āā Adip. Benz.	ʒjss ʒj

Mr. Morris[14] enters a protest against over-treatment in eczema, and gives a most interesting example of a patient who was over-treated in a hydropathic establishment.

REFERENCES.—[1] "New York Med. Journ.," Sept., 1894; [2] Cong. Thelasso-Ther., Boulogne, 1894; [3] "Rif. Med.," 1894, No. 211; [4] "Wein. Med. Woch.," 1894, No. 40; [5] "Gaz. Hebd. de Med. et de Chir.," April 28, 1894; [6] Derm. Soc. Berlin, June, 1895; [7] "St. Petersburg Med. Woch.," 1894, No. 51; [8] "Allg. Med. Centralztg.," 1894, No. 82; [9] "Journ. de Malade Cutanée," 1895, p. 4; [10] Soc. de Laryngologie et otologie de Paris; [11] "New York Med. Journ.," April, 1895; [12] "Annales de Dermatologie et de Syphiligraphie," 1893, No. 5; [13] "Journ. des Prat.," Sept., 1894; [14] "Brit. Med. Journ.," July 27, 1895.

EMPYEMA. *R. Shingleton Smith, M.D., B.Sc., F.R.C.P.*

John H. Morgan[1], in an excellent address on this subject, remarks that in the hospital for sick children the practice of rib removal has become almost universal, first, because the close approximation of the ribs does not allow of exploration by the finger, and secondly, for the same reason and by their movements upon one another the drainage tube is liable to be compressed, and the free issue of pus through it is liable to be considerably checked. In adults the case is different. The space between any of the first six inter-spaces is broad enough to admit the index finger, and therefore by this means all is gained by simple incision which can only be afforded in smaller patients by the more extended operation. Nevertheless, he is personally of opinion that in adults the more extensive operation gives the better results.

C. G. Cumston[2] believes that in recent favourable cases, devoid of all complications, all methods such as aspiration, incision, or resection, may bring about a cure. For cases which are incurable by the so-called classical methods, the **Siphon of Revilliod** offers the prospect of cure. The siphon consists of a tube of black rubber, which is inserted into the pleural cavity; two feet from the proximal end is placed a bulb, and distally, the tube, being continued for three feet, its termination is placed in a receptacle containing an antiseptic solution—either carbolic acid or creolin—so as to prevent the entrance of air. The proximal end is retained in position with plaster. If there is no fistula, an incision is made near the posterior axillary line, that

is, near the anterior border of the great dorsal muscle, whose fibres can be cut without inconvenience in the seventh or eighth intercostal space on the right, and in the eighth or ninth intercostal space on the left side. The advantages of this method are that there is no immobilization of the lung with retention of gas and liquid, but immediate expansion, and the washing out of the cavity is less necessary. In a word, the siphon cures without resection of the ribs and without fistula. Six cases are reported of either chronic or complicated pleurisies which would have been considered as incurable, all of which ended in recovery.

REFERENCES.—[1] "Clin. Journ." April 24, 1895; [2] "Boston Medical and Surgical Journal," vol. cxxxi, p. 502, 1894.

ENDOMETRITIS. *Theophilus Parvin, M.D., Philadelphia.*

Winckel, at the Vienna Congress of Gynæcology, stated that endometritis includes two chief groups: (1,) Simple catarrhal non-microbic; (2,) Purulent, and microbic.

The treatment of endometritis, according to Schultze, is daily irrigations with 3 per cent. **Sodium Solution** to remove the mucous secretions, by means of a simple catheter, followed by a 2½ per cent. **Carbolic Acid Solution,** and finally a 1 per cent. **Lysol Solution.** This plan is best suited to the glandular form of the disease.

To this list Winckel adds **Tincture of Iodine,** 2½ per cent.; **Sublimate,** 1 to 5,000; **Chloride of Zinc** and **Alum,** ½ to 1 per cent. solutions.

He advises in slight cases of glandular endometritis this general plan: (1,) An injection of from ¼ to ½ a quart of **Sodium Solution** (3 per cent.) followed by (according to the cause) 2 per cent. **Carbolic,** or ½ per cent. **Lysol,** or 2 per cent. **Silver Nitrate,** or 5 per cent. **Zinc Chloride,** or **Cupric Sulphate,** or **Aluminate of Copper** (5 per cent. solution) into the uterus through an ordinary (or Budin's) catheter, the instrument being moved from side to side to allow the fluid to flow out. The instrument having been removed, a tampon of **Iodoform Gauze** is placed below the uterus, and the patient allowed to rest an hour to avert uterine colic.

If colic comes despite this precaution, or if there is unusual tenderness of the adnexa, then the operation is discontinued, and a pause of from four to five days is enforced.

In mild cases of fungoid endometritis with metrorrhagia, of bleeding from myomata, and parenchymatous hæmorrhages, Winckel injects the **Sesquichloride of Iron** into the uterine cavity, dilatation being unnecessary.

When the endometritis has resisted all local applications, curetting is necessary, and in time cures. Fix the uterus, dilate the cervix,

curette carefully, then wash out the uterine cavity until neither blood nor shreds of membrane come away. Then a sound is passed into the cavity with gauze soaked in liquor ferri sesquichloridi. The cervix is now dried with absorbent cotton, and the vagina packed with iodoform gauze. The patient rests in bed from three to five days. Only in cases of fungoid, or where there is severe bleeding, is a second application necessary.

Fehling, in a communication made at the same Congress, divides the disease into puerperal, and non-puerperal cases. Treat the former at the outset (that is, when fever occurs in a lying-in woman, infection of the endometrium is to be feared) by vaginal injections of **Lysol, Permanganate, Carbolic Solution,** etc., repeated every two or three hours. If there is no improvement in twenty-four hours, wash out the uterus with sterilized warm water, or mildly antisepticized. Repeat these injections every twelve or twenty-four hours, and in the intervals use ice-bag, or wet pack to the abdomen. The injections are not contra-indicated, except by peri-, or para-metritis, and prove useful only up to six days, for beyond this it is to be feared that the septic process has passed beyond the endometrium. The curette is only justified if there be retained placental fragments, or membranes. It is followed by cauterization of the endometrium with 50 per cent. **Camphorated Alcohol,** or introduction of **Crayons of Iodoform**.

Non-puerperal endometritis, often gonorrhœal in origin, is to be treated in its acute form by **Ice** or **Wet Pack** to abdomen, rest in bed, mild purgatives, **Morphia,** vaginal injections, pencilling the cervix with a 10 per cent. solution of **Nitrate of Silver**; and if the appendages are in a sound condition, cauterization may be tried, in order to destroy the gonococci in the mucous membrane, using **Phenic Alcohol,** 50 per cent., **Chloride of Zinc,** 20 per cent., **Tincture of Iodine,** 20 per cent., or silver nitrate 10 per cent.

In chronic endometritis, the treatment at the beginning should be general rather than local. Tonics are given, bodily exercises regulated, mineral waters taken, the place being determined by the constitution and temperament of the patient. A high position at the sea-coast for temporary sojourn may also be recommended.

Before intervening locally, there should be no contra-indication, such as acute, or subacute metritis, inflammation of the appendages, para- or perimetritis. Also, before treating the endometrium, cervical and vaginal catarrh, if present, should receive attention.

If only disorders of circulation are present, the phenomena of uterine congestion, local bleeding, uterine massage, hot vaginal injec-

tions, the application of **Glycerine**, alone or with antiseptics, such as **Ichthyol, Carbolic Acid, Salol,** etc., are advised.

Direct treatment of the endometrium is preceded by dilatation of the cervical canal, which is best done by stems of laminaria that have been antisepticized. The local applications are made by means of the cotton-wrapped probe of Playfair, the cotton being dipped in a solution of **Iodine, Alcohol** and **Carbolic Acid, Perchloride of Iron,** 50 per cent., or solution of **Chloride of Zinc,** 10 per cent. Insufflations of medicines in powder are irrational. The curette should only be employed when the preceding means have failed, and never if there be acute or subacute inflammation of the uterus or of its appendages.

Vaginitis.—Professor Winckel has used **Formol** in vaginitis, and in catarrhal and blennorrhagic endometritis. He found benefit from a vaginal injection of a tablespoonful of a 10 per cent. solution of formol to 1 litre of water, and in disease of the endometrium from applying the solution to the interior of the uterus.

ENTERIC FEVER.

Synopsis.—(Vol. 1895, p. 263.) **Absolute Rest, Quiet,** and **Liquid Food** until temperature keeps below 99°, and has done so for a week. ℞ Ac. Carbol., ʒj; Tinc. Iodi, ʒiij; M. ft. mist. *Sig.*—4 drops in a wineglassful of water every four hours. These in combination act as gastric sedatives and antiseptics. Or.: ℞ Potass. Iodid., gr. 99—120; Aq. Dest., Aq. Menth. Pip., āā ʒiiss; Solut. Iodi., gr. 8—12; M. ft. mist. *Sig.*—8 to 10 drops sec. hor. Quill recommends: ℞ Ac. Carbol. Pur. (Calvert's), ♏36; Sp. Chloroformi, ʒij; Tinc. Cardamomi. Co., ʒiij; Syr. Hemedesmi, ʒij; Aq. Chloroformi, ad ʒxij; M. ft. mist. *Sig.*—ʒj every two hours with an equal quantity of ice-water. 3 to 5 doses should be given daily for a week after temperature has fallen to normal to prevent relapse.

ENTERITIS.

Synopsis.—(Vol. 1895, p. 239.) Empty bowel, allay pain, check fermentation. In mild cases soaked **Linseed,** a tablespoonful every three hours. To assist action of bowels, solid extract of **Hydrastis** with **Senna Leaves,** gr. j of former to gr. iij of latter. Occasional doses of **Castor Oil.** Large doses of **Olive Oil** are useful in muco-enteritis. **Morphine** and **Atropine** should be avoided, also **Bromides. Bromide of Strontium** or **Calcium** freely dissolved and taken during meals is useful in muco-enteritis of uterine disease, and **Chloride of Calcium** added to **Calcium Bromide** prevents debility from the latter. **Menthol** dissolved in alcohol and water is best if severe pains set in. **Phosphate** with **Salicylate of Soda** or **Borax** cures flatulency. Revilliod uses **Bismuth Injections** in membranous colitis after a preliminary enema of **Castor Oil** or **Ipecacuanha,** followed, if necessary, by an injection of **Boric Acid Solution.**

ENTROPIUM. (See "Eye, Diseases of.")

ENURESIS.

Synopsis.—(Vol. 1895, p. 240.) MacAlister used **Liq. Atrop. Sulph.** with **Liquor Strychninæ Hydrochlorat.**, restricting fluid taken, and directing that the bladder should be regularly emptied; the dose was increased until vision was interfered with. **Electricity**, negative pole in urethra and positive over pubes, together with **Strychnine** internally, or **Nux Vomica** combined with **Iron** or **Ergotin** may be used. **Belladonna** with **Camphor** is also useful, and may be also used as a suppository. **Bromide of Potassium** at night or **Antipyrin.** **Tincture of Belladonna** may be combined with **Cubebs, Nux Vomica** and **Aromatic Rhus Tincture.** Fenwick noted in these cases that 50% suffered from a hypertonic condition of the crural adductors.

EPIDIDYMITIS.

Synopsis.—(Vol. 1895, p. 242.) Rollet advises **Salicylate of Soda** or **Tincture of Pulsatilla.** To relieve pain, apply **Ice** or **Chloride of Ethyl Spray**, or **Warm Compresses.** Balzer and Lacour paint with diluted **Guaiacol** as ointment. Scharff uses **Electricity.**

EPILEPSY. (See also "Brain, Surgery of.")

Græme M. Hammond, M.D., New York.

TREATMENT.—C. Moeli[1] recommends the alternate administration of **Atropine** and **Bromide** in the treatment of epilepsy. Atropine is given for six or eight weeks, and then one of the bromides for a similar length of time. This method is especially serviceable in those cases in which large doses of bromide are either without appreciable effect, or else are not well borne. He begins with small doses, about $\frac{1}{130}$ gr. once or twice a day, and gradually increases the quantity, but never exceeds half of a maximum dose. No noteworthy ill effect has ever been observed, while the benefit, the author claims, is marked.

Bechterew[2] advocates the addition of **Adonis Vernalis** to bromides, because of its vaso-constrictor properties. He considers it a very efficient and prompt remedy. He has used it satisfactorily for a number of years.

Dr. Maxwell,[3] and several observers quoted by him, conclude that **Solanum Carolinense** materially controls epileptic seizures, and is worthy of confidence. They used the succus solanum. The "Therapeutic Gazette" (Feb. 15, 1895,) recommends the fluid extract in 10 to 15-drop doses three times a day.

Dobrourawo[4] reports a case of a boy sixteen years old, who had had epilepsy from infancy. It was associated with a pronounced aura of irritation, which always began in the right knee. He was removed to the hospital during an attack. While there the spasms were repeated at intervals of a few minutes. Iodide of potassium, bromide of potassium, in large doses, antipyrine, salicylate of sodium and chloral were administered to no purpose. Finally, at

the expiration of twelve hours, 6 m. grm. of **Curare** were administered hypodermically. The frequency of the fits soon diminished, and ceased completely by the following morning. The next day he experienced general muscular weakness and an indefinite sensation in the region of the right knee. During the following fifteen days five more injections of from 6 to 7½ m. grm. of curare were given. No other attacks appeared during the several months prior to the reporting of the case.

Murray[5] advocates the use of **Nitrate of Silver,** and thinks when it is properly employed that a deposit of silver, probably in the form of a chloride, takes place in the molecules or sub-molecules of nerve cells and fibres, and so alters their polarity that their explosive tendency is inhibited, and there is consequently an arrest of the epileptic discharge. He claims practically that nitrate of silver will cure epilepsy when the bromides have utterly failed ; and the patient who has subjected himself to a course of silver, producing a deposit in the tissues, secures a remarkable immunity from a variety of smaller ailments. This corroborates the view that silver blunts nerve-cell activity, and renders them stable and less easily disturbed by outward influences.

Collins,[6] in an article upon the treatment of this affection, with especial reference to the use of **Opium,** known as the Flechsig method, sums up his conclusions as follow: (1,) The plan suggested by Flechsig is not a specific in the treatment of epilepsy ; (2,) In almost every case in which this plan of treatment has been tried, there has been a cessation of the fits for a greater or lesser time ; (3,) A relapse generally occurs in a period varying from a few weeks to a few months ; (4,) The frequency of fits after the exhibition of opium is, for the first year at least, lessened by more than half ; (5,) The attacks occurring after the relapse are much less severe in character than those the patient has been accustomed to have ; (6,) This plan of treatment is particularly valuable in ancient and intractable cases ; (7,) In recent cases of idiopathic epilepsy it cannot be recommended ; (8,) The opium plan of treatment is an important adjuvant to the bromide plan, as ordinarily applied ; (9,) The opium acts symptomatically and merely prepares the way for and enhances the activity of the bromides and other therapeutic measures ; (10,) This plan of treatment permits the use of any other substances which are known to have a beneficial action in epilepsy.

Irritable Stomachs.—Dr. Murray,[7] in a paper on the treatment of epilepsy with **Nitrate of Silver,** incidentally makes the assertion that in cases of weak, irritable stomach, which are characterized by

intense depression of spirits, apprehensions, and failure of pluck or courage, this drug, in small doses in distilled water given on an empty stomach, will prove satisfactory, and a remarkable improvement in the functions of the stomach and in the emotional centres soon follows.

REFERENCES. — [1]"Therap. Monatsch.," Sept., 1894; [2]"Neurol. Centralblatt," Dec. 1, 1894; [3]"Indiana Med. Journ.," Nov., 1894; [4]"Die Therapie d. Gezunvart," Feb., 1895; [5]"Lancet," Sept. 12, 1895; [6]"Med. Record," Sept. 22, 1894; [7]"Lancet," Sept. 21, 1895.

EPISTAXIS.

Synopsis.—(Vol. 1895, p. 245.) Dry erosions or varicosities, and cauterize with **Chromic Acid** saturated solution, or **Galvano-Cautery.** Removal of tumours, vascular polypi, adenoids or enlarged tonsils. In growing children, **Ergot.** The fluid extract of **Hydrastis** is highly spoken of, given internally as a preventive. **Rest,** upright position, loosened clothing, are essential. Very rapid breathing with mouth open is useful, enunciating the vowel "A" at each expiration. Insufflation of **Tannin,** tamponing with **Iodoform Gauze** dipped in **Glycerite of Tannin.** Application of a solution of **Trichloracetic Acid,** to which may be added **Hydrochlorate of Cocaine** or **Tropa-cocaine** to prevent smarting. The sitting posture, with the feet in a hot foot-bath, is useful. Plethoric cases are relieved by **Tincture of Aconite** with **Liq. Ammon. Acetatis.**

EPITHELIOMA. (See "Cancer of the Skin.")

ERYSIPELAS. *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

M. Tison[1] has used **Nitrate of Aconitine,** dissolved in glycerine, alcohol and water, in facial erysipelas; 1 milligramme is given in twenty-four hours. Locally, an ethereal solution of **Camphor** is employed.

Professor Barr[2] advocates the use of **Pilocarpin.** He says that, if used early, it never fails. He usually commences with $\frac{1}{6}$ of a grain, repeated in two, in six, and in two hours more.

Local Treatment with Antiseptics.—"L'Union Médicale" (Sept. 29), reports a number of methods. Spraying with **Perchloride Solution,** 1 per cent. in **Ether.** This is said to cut a case short in twenty-four hours. **Ichthyol** is another remedy used, as an ointment 50 per cent., or as a strong alcoholic solution. **Carbolic Acid** is also used, both locally applied and subcutaneously. Another application is a mixture of 60 grains of **Carbolic Acid** and 3 of **Turpentine.** Yet another is **Tincture of Iodine, Carbolic Acid, Alcohol** and **Glycerine.**

Wilde ("L'Union Médicale") injects **Soda Sulphocarbolate,** and Petersen **Salicylic Acid,** Le Gendre 1 per cent. solution of **Boric Acid,** injected in a circle around the erysipelas. Riedel makes two series of incisions, crossing at right angles, and covers them with compresses, soaked in **Sublimate Solution.**

Gage[3] says that iodine has really no effect, and that the old-fashioned nitrate of silver method is valueless. He does not believe in the internal administration of iron, or indeed of any drug. He dresses his cases with **Carbolic Acid** dressing, 5 per cent. His experience extends to eleven cases.

Guaiacol is recommended by L. Bard[4]. He applies 1 or 2 grammes locally. A local application reduces temperature. He has only treated five cases, and the method is not one to be recommended.

Hallopeau[5] advises **Ichthyol in Traumaticin**, *e.g.*, gutta percha, chloroform, of each 25, ichthyol 50.

Felsenthal[6] used to scarify and rub in iodoform, but he has abandoned this for **Ichthyol.** Thomas[7] also lauds ichthyol.

Salinger[8] of Philadelphia has a paper on the use of **Pilocarpine** in facial erysipelas, giving notes on twenty-eight cases. In none did the treatment last longer than eight days, and quite a number recovered in four. He believes that the sweating opens a passage for the expulsion of the bacilli which are responsible for the disease. The full physiological effects must be produced; but he says it is only of value in so-called idiopathic erysipelas, as where erysipelas occurs as a secondary disease the process is more severe.

REFERENCES.—[1] "Practitioner," Dec., 1893; "La Médical"; [2] "Therap. Gazette"; [3] "Medical Record," Nov. 3, 1894; [4] "Lyon Médical"; [5] "Les Nouveaux Remedes"; [6] "Zeitschrift f. Kinderheilk," vols. 3-4, Dec., 1893; [7] "Liverpool Medical Chir. Journ.," July, 1893; [8] "Therap. Gazette," March 15, 1894, p. 154.

Synopsis.—(Vol. 1895. p. 248.) Anders concludes that **Diet** is an important factor; stimulants are rarely needed. **Iron** is useful, also **Quinine**, which reduces temperature; **Antiseptics** *per os* are useful; **Pilocarpine** aborts some cases. **Corrosive Sublimate Solution** may directly affect the erysipelococcus after scarification, and may be injected in erysipelas migrans. Arnozan gives 4-gr. **Quinine Pills** three or four times a day, and applies **Corrosive Sublimate Ointment.** Labanowski prefers **Compresses of Sublimate Solution.** Gaston uses **Hypodermic Injections of 12% Carbolic Acid**, and gives **Calomel** followed by **Epsom Salts in Senna Tea**, and then uses **Tincture of Perchloride of Iron**, and in some cases 10-gr. doses of **Chlorate of Potassium.** Gluck's method is **Scarification**, washing with **Antiseptic Solution**, pressing out serous exudation, and the use of 60% **Ichthyol Ointment** with cotton wool dressing and bandage. **Sparteine** has proved useful, according to Guimard and Geley.

ERYTHEMA (Influenzal). *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

Sutcliffe[1] reports the occurrence, during influenza, of a rash, indistinguishable from scarlet fever. There is no strawberry tongue, and the rash is in direct proportion to the amount of fever present. There is no desquamation.

Brasher reports a case where there was a combination of a scarlatiniform and urticarial rash ; the tongue was clean.

REFERENCE.—[1] "Brit. Med. Journ.," March 30, 1895.

EXOPHTHALMOS. (See "Eye, Diseases of.")

EYE (Diseases of) *G. E. de Schweinitz, M.D., Philadelphia.*

Ophthalmia Neonatorum.—Almost every germicide and antiseptic solution has been employed in ophthalmia neonatorum, or, to adopt the term suggested by Dr. George M. Gould, *Neonatorum Conjunctivitis*, but we do not appear to be in possession of any single remedy or series of remedies, which give promise at the present time of superseding with advantage the older methods of treatment, although copious irrigations with a solution of **Permanganate of Potassium** are attracting attention. This drug has reached a prominent place among remedies employed by general surgeons in the treatment of urethral gonorrhœa, and there are indications that it should be accorded a like measure of confidence in the management of neonatorum conjunctivitis.

Kalt[1] especially urges a free flushing of the conjunctival cul-de-sac with permanganate of potassium, and employs for this purpose a special *laveur*, and 2 litres of a tepid solution, 1 in 5,000, in each eye twice a day.

W. G. Sym,[2] in an excellent review of some recent papers on ophthalmia neonatorum, refers to this permanganate of potassium irrigation of Kalt's, and to the *laveur* which he employs as follows : "The important portion of the 'laveur' is an ebonite tube expanding at right angles just before its termination ; its shape thus allows it to be all the better retained, and not extruded by the spasmodic contraction of the lids, while the width of the circular portion introduced under the lids obviates any danger to the cornea. It is connected by a rubber tube with a reservoir, and the fluid is allowed to flow gently through it by raising the tank not more than 30 cm. above the level of the eye."

Burchhardt[3] speaks highly of **Chlorine Water,** probably with justice.

Formol is earnestly recommended by Fromaget.[4] It was first introduced for use in such cases by Valude, and appears to answer well when employed as a lotion (1 in 2,000), supplemented by painting with a solution ten times as strong. The weaker fluid causes no pain, but the application of the strong is decidedly painful. Valude and Fromaget, although they assert that they have seen cases do well under this treatment, which were not progressing favourably when treated in the classical manner, do not pretend that formol supersedes

Nitrate of Silver. They very sensibly observe that "in treating ophthalmia neonatorum we have two points at which to aim, viz., to destroy the cause of the evil, which is well accomplished by painting with silver nitrate, and to render unsuitable the medium in which it has been growing, for which *rôle* formol is well fitted."

Whether trikresol, which at one time seemed likely to assume a front rank among antiseptic substances useful in general surgery, will prove of value to ophthalmologists, especially in the treatment of conjunctivitis of various types, future experience will determine.

Perchloride of Mercury (mercuric chloride) is capable of injuring the corneal epithelium, and therefore of encouraging rather than allaying the danger of ulceration of this membrane. While I do not decry its value when properly used, I am persuaded that it has very often been the means of seriously impairing the nutrition of the cornea, on the one hand, and on the other, has lulled the surgeon into a sense of false security, simply because he has introduced within the conjunctival cul-de-sac the solution of a drug which is credited with remarkable germicidal properties—properties, however, which are not exercised under these circumstances.

Tweedy[5] seems to hold a somewhat different view, inasmuch as he states that perchloride of mercury, or **Chloride of Zinc**, applied when there is erosion of the corneal epithelium, causes coagulation of the albuminous material on the floor of the erosion and forms a limiting membrane. My own experience does not bear out this observation.

With reference to the old-fashioned **Alum Lotion,** Tweedy writes as follows: "Although alum lotion is not always safe, it is sometimes useful. The writer has seen several cases in which perforation of the cornea has been favoured by the use of alum. In all forms of conjunctivitis, and especially the more severe, the epithelium of the cornea is apt to become soft and eroded, and this event constitutes one of the great dangers in purulent ophthalmia. When there is erosion of the corneal epithelium, the solution of alum comes in contact with the corneal cement and dissolves it, thereby separating the corneal fibrillæ and favouring perforation of the cornea." His opinion of copious solutions of permanganate of potassium is contained in the following quotation: "Solutions of permanganate of potassium are sometimes employed by histologists to dissolve the corneal cement in making preparations of corneal fibrillæ; and though the writer has never seen any damage arise from the use of permanganate of potassium, he believes that the danger exists."

In this connection it may be worth while to quote the directions for

treating ophthalmia neonatorum followed in my service at the Philadelphia Hospital—a large city institution, in which ample opportunity presents itself for observing all types of this disease. While the prognosis must always remain grave, under the guidance of competent medical advice we have usually been successful *if the eye has been seen while the cornea is still clear*, except in those cases which assume a diphtheritic type, and in those which possess an inherent malignancy, or occur in infants, with great depression of their vitality—cases which really assume the lesions of a kerato-malacia rather than those of a neonatorum conjunctivitis.

These directions are as follow :—

(1,) During the earlier stages, when the inflammatory swelling of the lids is great, in addition to proper cleanliness, the local application of cold is the most useful agent. This should be applied as follows : Upon a block of ice, square compresses of lint are laid, which in turn are placed upon the swollen lids, and are as frequently changed as may be needful to keep up a uniform cold impression.

(2,) The discharge should be constantly removed, and in order to accomplish this, proceed as follows : Gently separate the lids, wipe away the tenacious secretion with bits of moistened lint or absorbent cotton, and irrigate the conjunctival sac freely with an antiseptic solution, care being taken that the point of the pipette does not come in contact with the cornea. For this purpose a saturated solution of **Boric Acid**, which, while it is not germicidal, is still feebly antiseptic and slightly astringent, is the most useful. If bichloride of mercury is employed, it should not be used in a strength greater than 1 grain to the pint.

(3,) As soon as the discharge becomes free and creamy, **Nitrate of Silver** should be applied as follows : Carefully evert the lids and secure complete exposure of the inflamed tarsal cartilage. Remove all discharge and flakes of lymph by irrigating the surfaces with the cleansing lotion, wiping away the adherent particles with moistened cotton. Carefully touch the area thus prepared with a cotton mop or camel's hair brush which has been dipped in a solution of nitrate of silver 10, or at most, 20 grains to the ounce. Neutralize the excess with a solution of common salt (a pinch of salt in a cup of water will suffice), and keep applying the saline solution until a clean red surface is secured ; return the lids to their proper position, and carefully inspect the cornea before leaving the case, and see that this inspection is made at each dressing of the eye. Finally, grease the margins of the lid with **Pure Vaseline**, some of which should be introduced within the conjunctival cul-de-sac.

(4,) Should the cornea become hazy, or should a small ulcer form at the periphery of the cornea, one drop of an **Eserine Solution,** $\frac{1}{8}$ to $\frac{1}{2}$ grain to the ounce, is used two, three or four times during the day, according to the severity of the case, and a drop or two of an **Atropine Solution,** 4 grains to the ounce, at night—care being taken to avoid constitutional disturbances from these drugs. If the corneal haze, indicating low vitality of this membrane, continues, the cold compresses are replaced by *hot* applications, which should consist of squares of lint wrung out in a slightly carbolised solution at a temperature of 120° F.

We have used in this hospital almost all usual solutions, particularly alum, peroxide of hydrogen, permanganate of potassium, aqua chlorinata, and cyanuret of mercury, but have not been convinced of their superiority over the method just described.

So far as hospital practice is concerned, it seems that Crede's method is still the one on which the most reliance may be placed, but I am inclined to agree with recent observations in France, that it is unnecessary to use a 2 per cent. solution of silver, but that 1 in 200, or 500 is sufficient. In private practice, and in the absence of infection, especially when careful aseptic midwifery has been practised, Crede's method, either the one originally described, or with the modifications suggested, seems to be unnecessary, a careful cleansing of the conjunctiva with a saturated solution of boric acid, a 1 in 5,000 of bichloride lotion, or with aqua chlorinata, being sufficient. It should be remembered that injudicious intravaginal antisepsis with strong solutions of bichloride of mercury may originate a vaginitis itself capable of inducing one form of conjunctivitis in the new-born child, and the best obstetricians confine the application of strong solutions in uncomplicated labours to the external genitalia. I am convinced that this caution is worthy of consideration, and am confirmed in my belief by no less an authority than Professor B. C. Hirst, the Professor of Obstetrics in the University of Pennsylvania.

John E. Weeks[6] has contributed a capital paper on the status of our knowledge of the etiological factors in *Acute Contagious Conjunctivitis.* It will be remembered that this author so long ago as 1887 demonstrated a small bacillus, now very properly known as the "Weeks-bacillus," in this form of conjunctivitis, and that very similar results were reached by Kartulis working in Alexandria, Egypt, without knowledge of the researches of Dr. Weeks. Recently a most thorough study of this micro-organism has been made by Morax, in France, thoroughly confirming previous work on this subject, and it may now be definitely stated that the contagious qualities of acute

muco-purulent conjunctivitis depend upon the presence of this bacillus.

The following is Dr. Weeks' description: "The bacillus resembles that of mouse septicæmia very closely in form, but does not resemble it in the least in the manner of growth. It measures from one to two micromillimètres in length, and about 0·25 micromillimètres in thickness. Compared with the tubercle bacillus, it is much shorter and is not so thick. The variation in length is much more marked in cultures than in the secretion from the conjunctiva. No spore formation is found. When in process of rapid development, as in the early stages of very severe cases of the conjunctivitis, the bacilli appear to be very little thicker, and, from their rapid division, somewhat shorter than usual."

Eye Therapeutics.—The literature of *subconjunctival injections* of various antiseptic substances—a method of treatment which received much impetus after Darier's publications in 1892—continues to increase, but even at the present time ophthalmic surgeons are far from being in accord in their conclusions, and one may find statements varying from extravagant praise to equally extravagant condemnation. In some countries the method has found few advocates, particularly in England, but judging from the French journals the original advocates of subconjunctival therapeutics, while they may have changed somewhat the methods, the doses, and even the character of the fluids, they have not altered their freely expressed favourable opinion.

In America not many publications have appeared, but those who have written have usually expressed a conservative view. Charles Stedman Bull[7] reaches the following conclusions: "The pain induced by the injections is always severe, in spite of the persistent and careful use of cocaine. The reaction is apt to be severe, and sometimes very severe. The only classes of cases in which the sublimate injections seem to exert any positive effect in allaying the severity of the symptoms, and shortening the duration of the process, were those of scleritis and acute iridochoroiditis of the non-syphilitic type. The method of treatment by subconjunctival injections of **Sublimate Solutions** is still on trial, and should not be promiscuously employed in all sorts of cases as part of, or in place of the routine treatment. It must stand or fall on its merits, and these can only be ascertained by careful and long-continued observation of a large number of cases. The severe pain and the occasional violent reaction produced by the injections must always be a bar to the universal employment of his method of treatment."

Some recent observations indicate that the germicidal power of the sublimate solution has been over-rated, and that the physiological action of these injections depends upon the influence of the fluid in stimulating the currents in the lymph channels in the affected tissues. Thus Mellinger, in his experiments on rabbits, observed that strong solutions produced adhesive inflammation in the conjunctiva, while weaker solutions, for example, 1 in 4,000, yielded no such result. The influence of these dilute sublimate solutions suggested the possibility that the fluid itself, and not the germicide, was responsible for the beneficial results. With this idea in mind, a normal salt solution was substituted for the germicidal solutions.

The whole matter has been made the subject of a thesis by Arnold Marti[8] who formulates Mellinger's conclusions, as follow :—

(1,) Subconjunctival sublimate injections act favourably upon destructive corneal ulceration, but lead to adhesive inflammation and obliteration of the subconjunctival space.

(2,) Subconjunctival salt injections render service of, at least, equal value, without the disadvantages of sublimate injections.

(3,) The good results obtained by subconjunctival injections depend not upon a disinfecting action of the solution, but upon its quickening influence upon the lymph circulation.

(4,) The quickening of the lymph circulation causes a quicker absorption and elimination of the noxious material, and thereby hastens the healing process.

(5,) According to the experiments of Heidenhain, common salt is among the most active of the substances which accelerate the flow of lymph; there is, therefore, a reasonable explanation of the good results which have been clinically observed.

My own views[9] in regard to subconjunctival injections, after a very considerable experience, are contained in the following words : "There is always a temptation to ascribe undue prominence to new remedies, and these injections have not escaped in this respect, but I think it may be safely said that while proof is not sufficient at present to grant them a value in excess of other older and well-recognized methods of treatment, they represent a therapeutic measure of definite value, and should not be neglected in the consideration of inflammatory affections of diverse origin located in the uveal tract." If Mellinger's and Marti's conclusions should be confirmed by further experimentation, it would appear that the good results thus far obtained have been due rather to the fluid than to the action of the germicide.

De Wecker,[10] after quoting Guttmann's unfavourable opinion of

sublimate solutions, states that he has never been an enthusiast for this method of subconjunctival therapeusis, but advocates large injections, namely, ½ a Pravaz-syringeful, using the following formula :—

℞ Sublimate 0·015 gr. | Sterilized Dist. Water 30 grms.
Salicylate of Eserine 0·5 gr. |

The myotic is replaced by atropine or scopolamine when the case is complicated with iritis, and the combination of the sublimate solution with a myotic has seemed to De Wecker to produce a more favourable action than the simple sublimate solution. He concludes that, inasmuch as in many destructive affections of the cornea occlusion of the eyes, and large subconjunctival injections have been the only method of treatment employed, the curative power must be attributed to them. He considers it of slight importance whether this is due to antisepsis or to acceleration of the lymph current in the cornea, or finally, to the circulatory modifications which occur—all influences whose quantitative action it will never be possible to verify.

Diphtheritic Conjunctivitis.—The success which has attended the use of **Antitoxine Serum** in the treatment of pharyngo-laryngeal diphtheria has naturally directed the attention of ophthalmologists to this means of medication in the management of cases of *diphtheria of the conjunctiva*, and a number of reports are now upon record indicating the value of the remedy. Even paresis of accommodation, the result of diphtheria, has been treated with the antitoxine serum by Schmidt-Rimpler with good results, and the curative action of the remedy has been illustrated in cases of conjunctival and nasal diphtheria, reported by Coppez and Desseaux in France, and Jessop in England.

Recently, Morax[11] described three cases, as follows : Case I.—Conjunctival, nasal and laryngeal diphtheria following measles ; tracheotomy ; treatment with serum ; recovery. Case II.—Monocular conjunctival and palpebral diphtheria; injection of 10 cc. of serum; recovery. Case III.—Conjunctival and nasal diphtheria; injection of 20 cc. of serum ; recovery.

Commenting on these cases, Morax states that inasmuch as diphtheritic conjunctivitis is sometimes a benign affection, the recovery may not have been due to the injection of serum, but the disease may have recovered spontaneously. This idea, however, is not tenable, on account of the rapidity of recovery and the changes in the local and general condition which followed closely upon the injection. In answer to the question what course the physician should pursue with a case of pseudo-membranous conjunctivitis, Morax advises, in the absence of a bacteriological examination, that all cases should be submitted to an injection of serum. If the diphtheritic deposit is localized

upon the conjunctiva an injection of 10 cc. is sufficient, but if the false membrane extends to the nasal chambers and the pharynx, the injection should be increased to 20 cc. The best point for the injection is under the skin of the abdomen. Locally, the eyes may be treated with hot water or a solution of boric acid.

Ulcer of Cornea.—The close connection between rhino-pharyngeal disease and certain *ulcers of the cornea* is being emphasized more clearly each day, and there seems little doubt that many simple ulcers of the cornea and the vast majority of cases of so-called *phlyctenular keratoconjunctivitis*, even if they are not directly caused by various types of nasal disease, are certainly fostered and aggravated by them. To secure a satisfactory therapeutic result, the nasal chambers, the pharynx, and particularly the lachrymo-nasal duct, must be brought into a healthy condition.

The conclusions of Lewis Ziegler [12] are as follow: "Simple corneal ulcer is a purely local inflammatory process, arising chiefly from infection by septic secretions, and originating in lachrymo-nasal lesions: (1,) Treat the nose locally with compound **Tincture of Benzoin**, and use a cleansing spray; (2,) Employ a mild antiseptic eye-wash, a mydriatic if necessary, and hot applications when indicated; (3,) Regulate the diet, give salt water baths, and improve the hygiene generally."

In the treatment of infected and sloughing corneal ulcers this relation of nasal and lachrymo-nasal disease must not be neglected, because no matter how careful the local therapeusis may be, if there is a constant source of infection from these passages, healing cannot take place.

My own experience with subconjunctival injections of germicides in the treatment of sloughing corneal ulcers has not been a favourable one, although, as is well known, they comprise a class of cases for which this method of treatment has been strongly urged.

Recently Abadie,[13] in addition to disinfection of the lachrymal canals and the nasal fossæ, urges the subconjunctival injections, placing them in advance of the actual cautery, curetting, and similar measures. It is to be noted, however, that he also used iodoform and the occlusion bandage.

Dr. Mules, as originally reported to the Eighth International Ophthalmological Congress at Edinburgh, proposed to heal infective corneal ulcers with **Iodoform Wafers**. His method is as follows: "The cornea is anæsthetized, and then with a brush a portion of the softened iodoform wafer is placed upon the cornea. The lid is next drawn from the front of the globe and the eye closed, the dressing consisting of an iodoform pad with strips of plaster and a narrow

flannel roller, which is allowed to remain for three or four days. The iodoform wafer is prepared by dissolving gelatine in a saturated solution of boric acid, and stirring in iodoform reduced by trituration to an impalpable powder, then spreading over glass plates to the required thickness, and allowing it to dry. Before use it should be soaked for a minute or two in a cold solution of boric acid."

After perforation of a cornea from ulceration it is sometimes possible to secure a flat cicatrix by the method of Gama Pinto, that is, closing the wound with a transplanted conjunctival flap.

Dr. Wecker[14] recommends the treatment of *wounds of the cornea* by conjunctival occlusion. His method, abstracted by Lawford in the "Ophthalmic Review" (February, 1895), is as follows: "The conjunctiva and the subconjunctival tissue are carefully divided all round, and close to the margin of the cornea. The conjunctiva is then separated from the deeper tissue almost as far as the insertions of the recti muscles, and when thus freed from its attachments is drawn over the cornea and stitched, either by a continuous suture *(suture en bourse)*, which brings the cut margins together like the drawing string at the mouth of a bag, or by four or six separate sutures. Care should be taken that the stitches are passed through the subconjunctival tissue in order that they may not cut out prematurely; the cornea is thus covered in its entirety by conjunctiva. The edges of the eyelids and the cilia having been carefully cleansed, a dressing and bandage are applied and allowed to remain undisturbed for eight or ten days, until the suture threads have become spontaneously detached.

"In De Wecker's experience there has been no case in which the adhesion of the conjunctiva to the cornea was more extensive than was desirable. It has always left unaffected the part of the cornea which had not been wounded, its adhesion to the cornea being limited to a narrow area adjoining the lips of the wound.

"By this treatment De Wecker maintains that it is possible to save eyes which have sustained very large wounds of the cornea, if the operation is performed (under general anæsthesia) very soon after the accident. Time should not be taken to deal with deeper lesions, such as wound or dislocation of the lens, which can be better treated after the subconjunctival healing of the corneal wound has taken place.

"The operation, he adds, is very easily performed, and leaves no visible scar."

Whether this method, or a modification of it, would apply to a perforation of the cornea, the result of ulceration, remains to be seen.

In a case of monolateral gonorrhœal conjunctivitis, complicated with sloughing ulcer at the inferior portion of the cornea, perforation

and a large prolapse of the iris, I have succeeded in obtaining a very good result by the following method: The prolapse was abscised, the margins of the aperture carefully cleansed, and the adherent iris freed as much as possible. The opening was then closed with a flap of conjunctiva, transplanted from the other eye, the size being almost that of the circumference of the cornea, or, in other words, fully three times the size of the original opening. The eye was bandaged, but the dressings removed twice a day owing to the presence of some discharge from the inflamed surfaces. The result was admirable. The graft became adherent, there was no bulging, or very little protrusion of the cicatrix, and although the iris was somewhat adherent and the pupil distorted, the subsequent vision was about one-seventh of normal—far better than could possibly have been expected from the serious nature of the lesion and the extensive prolapse of the iris. The patient has been seen several months after the operation, and the eye remains quiet and the cicatrix nearly flat.

Corneal Injuries.—We are indebted to Dr. Edward Jackson[15] for an ingenious method of removing *powder grains from the cornea* and the skin by means of the **Galvano-cautery**. Dr. Jackson points out that the problem presented to the surgeon is not the removal of the imbedded masses, but of the microscopic particles diffused through limited portions of tissue. The impossibility of getting rid of these diffused particles without the destruction of the tissues surrounding them led Dr. Jackson to the use of the galvano-cautery, and he proceeds as follows: A small cautery tip is kept at a white heat, and the points involved are touched in rapid succession, the contact being continued each time until it is thought that sufficient tissue has been destroyed. No especial after-treatment is required, and the sloughs separate in a few days with very little pain or irritation. The resulting scars, even when thickly placed, cause a disfigurement insignificant in comparison to that left by the original injury. Dr. Jackson further believes that the galvano-cautery may be employed to remove foreign bodies other than powder grains deeply imbedded in the cornea, for example, particles of coal, which in this situation are liable to cause suppuration. He thinks that in the presence of acute or chronic conjunctival inflammation, their removal with the cautery point is safer than with any cutting or scraping instrument.

Iritis.—Dr. Brailey contends that a *form of iritis*, not usually recognized, sometimes appears as a late manifestation of acquired syphilis, the average time of the attack usually being about thirteen years after the primary sore. He describes this iritis as double-sided, of the serous type, that is, an irido-cyclitis, with comparatively little

tendency to the formation of posterior synechiæ, and accompanied by dots on the posterior corneal surfaces, and also a tendency to secondary glaucoma. In the discussion which followed this paper the novelty of the cases was doubted, and certainly every practical ophthalmologist is familiar with this type of inflammation, but Dr. Brailey's paper is an important clinical contribution, first, because the type of the iritis sometimes leads the practitioner astray as to its etiology, especially when the remote relation to primary syphilitic infection is remembered, and in the second place because the undoubted tendency to secondary glaucoma should modify in many respects the ordinary local measures for iritis. In some cases, evidently of this character, I have thought that injections of corrosive sublimate beneath the conjunctiva were effectual. It may be, however, as has been pointed out in an earlier portion of this review, that the sublimate itself is of little value, and that the same result would obtain with an ordinary saline solution.

Sympathetic Ophthalmitis. — Dr. R. L. Randolph,[16] of Baltimore, claims that certain eyes wounded in the ciliary region and lens, which ordinarily would be condemned to enucleation for fear of *sympathetic ophthalmitis*, may be saved by removal of the lens, and that sometimes comparatively useful vision is secured. The extraction of the lens, which really acts as a foreign body, is believed to facilitate the removal of the infectious contents of the ciliary region, the effect being practically analogous to the incision of an abscess. The operation should be performed during the first week after the injury, when sympathetic ophthalmitis is too remote to outweigh other considerations.

Concerning the question of the curability of sympathetic uveitis, Rogman [17] contributes his own experience and a *résumé* of the experiences of several other surgeons. One of the difficulties in the way of obtaining accurate information on this point is the fact that many cases have been reported before sufficient time has elapsed to test the permanency of the cure, because it is well known that amelioration in this disease is often followed by relapse and ultimate blindness. The cases that Rogman has summarized show that the time during which recovery was maintained was respectively three and one-half years in one of his own cases, five years in another, seven, nine, and seven years respectively in cases of Schirmer's, twelve years in Hirschberg's case, and two years in that of Laquer's. Rogman doubts whether Laquer's case should be added to the list, evidently thinking that sufficient time has not yet elapsed to establish the durability of the cure. I have observed one case of sympathetic serous iritis, cured by enucleation of the excitor and subsequent mercurial treatment, in

which the favourable result has maintained for two years, the man pursuing the occupation of a miner.

Detachment of Retina.—Scarcely a month passes without some addition to the already large amount of ophthalmic literature pertaining to the treatment of *detachment of the retina*, but in spite of the accumulated experience, we are not in possession of therapeutic measures, surgical or medicinal, which seem to indicate much therapeutical advance.

The experiences of Dr. Charles Stedman Bull,[18] who has detailed thirty-eight cases of this affection, are very interesting, and his conclusions deserve record :—

(1,) The science and practice of ophthalmology have as yet discovered no better means for dealing with detachment of the retina than the old methods which have been advised and carried out for so many years, viz., rest on the back in bed, **Atropine,** a bandage, and the internal administrations of some drug which may induce absorption of the subretinal fluid.

(2,) The continued use of pilocarpine, either hypodermically or by the mouth, may cause great prostration, even in cases in which it is apparently well-borne ; and the desired effect may sometimes be produced by small doses of **Bicarbonate of Soda** and **Iodide of Potassium,** largely diluted with water.

(3,) In all recent cases, puncture of the sclera subconjunctively may do good temporarily by letting out the subretinal fluid and allowing the retina to collapse, thus producing some improvement in the vision, but the apparent improvement is generally transient, and when membranous bands exist in the vitreous no improvement can be expected from simple puncture.

(4,) Division of fixed membranous opacities in the vitreous causes but little reaction, and may do positive good, even without division of the detached retina, as it reduces the danger of extension of the detachment. It is positively contraindicated in cases where the vitreous opacity is vascularized, as it would certainly induce free hæmorrhage into the vitreous. It should never be done in an irritated or inflamed eye.

(5,) Division of the detached retina, which allows the subretinal fluid to escape into the vitreous chamber, may always be done in a quiet eye, and causes little or no reaction. If membranous bands are present in the vitreous, these should also be divided at the same time.

(6,) In most cases all these operative procedures produce but temporary improvement, and in many cases no effect whatever is gained by them.

(7,) There seems no good reason for any further endorsement of the method advocated by Schöler, but every reason for rejecting it from the domain of ophthalmic surgery.

In the discussion which followed this paper I had occasion to refer to the use of one drug in the medicinal treatment of detachment of the retina, namely, **Salicylic Acid.** I have been led to its use after reading the very interesting results published by Dr. George Dock, of the University of Michigan, in the treatment of plural effusions by the administration of frequently repeated small doses of salicylic acid. To be sure, this drug is one of those ordinarily found in the list of remedies recommended to aid in the absorption of subretinal fluid, but I do not believe it has received a wide endorsement, and am satisfied it is worthy of further trial.

Somewhat in contrast to Dr. Bull's ideas of the treatment of retinal detachment, the conclusions of Terson [19] may be quoted :—

"(1,) Positive **Electrolysis** should be applied to recent retinal detachment, and it will have the greater chance of success the sooner it is used after the onset of the accident.

"(2,) This method of intervention interferes in no way with the use of all the medical methods recommended for lesions of diathesic origin, the value of which has been shown by long experience, from the palliative standpoint.

"(3,) Clinical observation and experiments on animals prove that the application of a current of five milliampères of one minute duration is inoffensive to the eye."

According to various authors quoted by Terson, electrolysis acts both by exciting the absorbent properties of the vessels in the neighbourhood of the effusions, and by modifying the composition of its fluid contents. It has a powerful coagulating effect, especially if the positive pole is applied at the diseased point. Terson uses a strong needle made of platiniridium, applying a current of five milliampères for an exact period of one minute.

Bull's fifth conclusion, in which division of the detached retina, allowing the subretinal fluid to escape into the vitreous chamber, is a permissible operation in a quiet eye, and in which the direction to divide membranous bands in the vitreous is advocated, is instructive in connection with the new treatment for detachment of the retina, which has been advocated by Deutschmann [20] as the result of five years' experience. This consists of division of the retina and vitreous humour, all strands of adhesion between the retina and the shrinking vitreous being thoroughly separated.

The operation is done as follows : The pupil is thoroughly dilated,

the conjunctiva drawn aside, and a double-edged knife introduced obliquely through the sclerotic, choroid, and retina into the vitreous humour in the direction of the detached retina. The knife should be pushed onward until the point reaches the coats of the eye opposite to the wound of entrance. As it is gradually withdrawn, cutting movements are made in the direction of the two edges alternately. The subsequent treatment consists of a loosely applied bandage, the daily instillation of atropine for at least a month, and rest in bed for a week. Even after that, great care must be exercised to avoid sudden movements. The operation may be repeated if no improvement is evident at the end of four or five days. Deutschmann expects to accomplish by his operation evacuation of the subretinal fluid, division of the retina at least twice in different positions, severance of strands in the vitreous humour which drag upon the retina, and escape of the fluid in the subvitrinal space. He has also assisted his laceration operation by transplanting the vitreous humour from the eye of the rabbit, the vitreous having been previously reduced to a fluidity suitable for use in a syringe by mixing it with disinfected salt solution. A number of successful cases are quoted, but it is impossible not to approach this operation with feelings of scepticism. It seems to attempt too much, and, moreover, works upon lines which have already been proven to be no more successful than less desperate measures, and, indeed, perhaps not as successful as the so-called medicinal treatment which Deutschmann in the early portion of his paper considers to be without avail.

Albuminuric Retinitis.—Recently two papers on the duration of life after the development of *albuminuric retinitis* have appeared, which may be quoted in contrast. The one is from the pen of Possaner, and constitutes a Zurich thesis for 1894.

It has been abstracted in the "Annales d' Oculistique," and in the January number of the "Ophthalmic Review," as follows: "Retinitis albuminurica, in connection with chronic renal disease, was noted in the Zurich cliniques in 0·19 per cent. of sixty-seven thousand cases. In eighty cases the authoress was able to obtain a reliable after-history, but eight of this number have to be eliminated, the cause of death being accidental.

"In the remaining seventy-two cases the course and termination of the disease showed some difference, according to the sex and surroundings of the patient. Of thirty-nine cases from Professor Haab's private clinique, twenty-three (58·9 per cent.) died within two years of the diagnosis of the retinal disease, the morality being 53·8 per cent. among females, and 61·5 per cent. among males. Five men and five

women were still alive, at periods of two and a quarter to six years for the men, and three and a half to eleven years for the women, since the onset of retinitis.

"Of thirty-three cases in the hospital clinique, all the males and 68·4 per cent. of the females died in less than two years. Four women were still living, one of whom had been under observation for six years. The age of the patients varied from six to sixty years, a large majority being over forty years, Two cases were syphilitic; one lived three months, the other two and a quarter years.

"Nothing is mentioned in the abstract as to the number of cases (if any) in which the albuminuria was a complication of pregnancy.

"The results of this research, the authoress thinks, indicate that the prognosis in these cases is not quite so unfavourable as the statistics of Miley, Stedman Bull, and others seem to show; the difference in the mortality among the two classes of patients is very noticeable. Patients in good social position and hygienic surroundings succumb much less rapidly than those who are poor, and in whom, as the writer suggests, alcoholism probably hastens the end."

Dr. E. O. Belt,[21] of Washington, has investigated the prognostic significance of albuminuric retinitis with special reference to a comparison between the average duration of life among private patients as compared with hospital cases.

After communicating with a number of ophthalmic surgeons and an extended examination of hospital reports, Dr. Belt has compiled the following statistics :—

Cases in Private Practice.—One hundred and fifty-five. Of these, 62 per cent. died within one year, 85 per cent. in two years, and 14 per cent. lived more than two years.

Cases in Hospital Practice.—Seventy-seven. Of these, 85 per cent. died within one year, 93 per cent. within two years, and 6 per cent. lived for more than two years.

Mixed Cases.—One hundred and eighty-seven. Of these, 65 per cent. died within one year, 93 per cent. within two years, and 6 per cent. lived more than two years.

Total Number of Cases.—Four hundred and nineteen. Of these, 72 per cent. died within one year, 90 per cent. within two years, and 9 per cent. lived longer than two years.

A comparatively rare retinal lesion has recently received fresh attention. The condition was described three years ago by Plange, when he called attention to certain pigment striæ, with secondary changes in the retina after hæmorrhage. His communication was followed by a paper by Dr. Knapp, who gave the name *Angioid*

Streaks to this condition. A similar condition is described by Sydney Stephenson, characterized "by the presence of dark, reddish-brown anastomosing bands lying beneath the retinal vessels and extending over a large area of the fundus." Ward Holden[22] contributes an article on the probable hæmorrhagic origin of the striated affections of the retina, and concludes that it would seem warrantable to assume as a hypothesis to be verified by future observation that the affection called *retinitis striata*, like that called angioid streaks, arises through the elements of peripheric hæmorrhages being diffused in a linear manner in the deep layers of the retina, and undergoing various sorts of metamorphoses.

To this series of cases I may add another at present under observation, in which, in addition to several hæmorrhages throughout the eyeground, there occur over a large area of each fundus, especially on the nasal side, numerous branching and anastomosing lines, or streaks, lying beneath the retinal vessels, partly brownish-black, and partly reddish in colour. They resemble a system of obliterated vessels, are slightly elevated, and may be compared to diminutive ridges, not unlike those made by a mole when he burrows beneath the surface of the ground. The hæmorrhagic nature of these striæ or ridges, seems undoubted. In many of them the metamorphosis of the hæmorrhage is not complete, and the red colour remains; others are in direct connection with the large hæmorrhages which have been described.

An interesting feature of the case which I have just detailed, is the apparent gradual disappearance of the lesions under a prolonged treatment, which has consisted in the administration of small doses of **Mercury**, usually in the form of biniodide or bichloride, together with full doses of the fluid extract of **Ergot.** In several months, the vision has risen from counting fingers to $\frac{6}{6}$ and $\frac{6}{4}$ respectively. Whether this improvement has been due to the drugs, or is a coincidence, I am unable to say, but it seems to be a therapeutic point worth consideration.

Glaucoma.—The question of *posterior sclerotomy* in glaucoma is discussed by Parinaud[23], and his views in connection with the recent recommendation of Priestley Smith to systematically associate scleral puncture with iridectomy in the treatment of acute glaucoma, and the similar suggestion of Gifford in the United States of America, are important. He doubts whether Priestley Smith's idea of performing the two operations, that is, posterior sclerotomy and iridectomy, simultaneously, is advisable, because in acute glaucoma the great decrease in tension, which may follow the scleral incision, is likely to render the

immediate performance of iridectomy a difficult procedure. According to Parinaud, its value in acute glaucoma depends, in the first place, upon the fact that it gives some idea of the malignancy of the glaucoma, and in the second place, because it renders iridectomy easier by decreasing the depth of the anterior chamber, and lessening the excessive hardness of the eyeball, although, as before stated, he allows some time to elapse between the sclerotomy and the iridectomy. Naturally, one chief advantage is the simplicity of the operation, and another is that it may be repeated several times, and practically without risk, a Græfe knife being the only instrument which is necessary. With this instrument, a puncture is made, preferably between the external and inferior recti muscles about 8 mm. from the cornea. The knife should be entered to a depth of 6 mm., its point being directed toward the centre of the eyeball. On its removal, the knife should be caused to execute a quarter turn, which incises the sclera in a direction perpendicular to the first position of the blade.

Internal Sclerotomy, or an incision of the tissue of the angle of the iris, was described in some detail at the Congress in Rome, in 1894. De Wecker performed the operation by inserting a knife 1 mm. from the transparent border of the cornea, so that the back of the knife is pointed exactly in the direction of the horizontal diameter, and when the counter-puncture is reached, and the point of the knife has disappeared under the opposite border of the cornea, the arches of the pectinate ligament are incised by causing the point of the knife during its withdrawal to execute a semi-circular movement. De Wecker thinks that the indications for internal sclerotomy are still to be confirmed by many operations, particularly in relation to infantile glaucoma, but as he considers the operation, in skilled hands, practically free from danger, he proposes to try it in cases of progressive myopia in young persons, even though the myopia at the time of the operation may be slight in amount. With characteristic enthusiasm, and confidence in his own resources, De Wecker concludes his article as follows:—"The arrest of progressive myopia by a surgical operation, a question with which Von Græfe was so much occupied during the latter years of his life, is then a subject worthy of all our efforts, and I think we are justified in counting among the methods for experimentation the absolutely inoffensive method of intervention supplied by the new internal sclerotomy."

Cataract.—Touching the question whether the greatest advantage accrues to a patient from the *combined*, or the *simple extraction of cataract*, the study of over two thousand cases by Dr. Frank W. Ring, in the "Medical Record," (February 23, 1895), deserves attention.

He has gathered the statistics of one thousand and thirty-two cases of combined extraction, and one thousand one hundred and twenty-three cases of simple extraction performed by competent operators in contrasting tables, which follow here :—

COMBINED EXTRACTION.—1,032 CASES.

Operator.	Number of Cases.	Prolapse of Vitreous. Per cent.	Average Vision with Prolapse.	Incarceration of Iris. Per cent.	Prolapse of Iris. Per cent.	Iritis. Per cent.	Suppuration. Per cent.	Discission. Per cent.	Perfect Successes. Per cent.	Partial Successes. Per cent.	Failures. Per cent.	Average Vision.
Knapp	300	9·00	0·15	6·7	.....	7·6	3·70	37·0	89·0	5·3	5·7	0·37
Agnew	100	5·00	0·22	4·0	.....	16·0	2·00	36·0	93·0	2·0	5·0	0·34
Webster.....	100	7·00	0·40	2·0	.....	10·0	3·00	22·0	81·0	9·0	10·0	0·28
H. Derby	100	9·00	0·24	....	.....	19·0	1·00	19·0	89·0	10·0	1·0	0·30
Schoeler.....	232	6·40	0·02	....	.....	.....	1·29	17·7	86·0	11·4	2·6	0·38
Kerschbaumer	200	7·00	0·35	6·5	.....	.....	0·05	34·0	90·5	7·0	2·5	0·35
Average.....	....	7·23	0·23	4·82	.....	13·15	1·91	27 61	88·08	7·45	4·47	0·34

SIMPLE EXTRACTION.—1,123 CASES.

Operator.	Number of Cases.	Prolapse of Vitreous. Per cent.	Average Vision with Prolapse.	Incarceration of Iris. Per cent.	Prolapse of Iris. Per cent.	Iritis. Per cent.	Suppuration. Per cent.	Discission. Per cent.	Perfect Successes. Per cent.	Partial Successes. Per cent.	Failures. Per cent.	Average Vision.
Knapp	300	3·70	0·35	4·0	8·0	11·3	0·33	60·0	96·3	2·7	1·0	0·53
Webster.....	100	5·00	0·20	.....	11·0	18·0	1·00	26·0	91·0	4·0	5·0	0·59
N. Y. Eye and Ear Infirmary.	71	6·80	0·35	....	6·8	12·0	....	22·0	98·6	.....	1·4	0·55
Schoeler	317	2·84	0·28	....	6·3	.....	1·89	24·2	83·0	13·9	3·1	0·37
Manhattan ...	100	3·00	0·23	....	12·0	6·0	2·00	33·0	97·0	1·0	2·0	0·44
Schweigger ..	235	....	....	....	7 9	.....	2·60	.....	79·0	16·2	4·8	0·42
Average (simple)	....	4·27	0·29	4·00	8·66	11·82	1·30	33·04	90·82	6·3	2·88	0·48
Average (combin'd)	....	7·23	0·23	4·82	.....	13·15	1·91	27·61	88·08	7·45	4·47	0·34

According to these tables, it is evident that in the simple extraction there is less loss of vitreous, less iritis, less suppuration, and fewer total failures than in the combined extraction, and moreover, that the

perfect successes in the former were 2·8 per cent. greater than in the latter. Unfortunately, it is impossible to compare prolapse of the iris in the two series, because it is not mentioned in the one thousand and thirty-two cases submitted to combined extraction, although, as Dr. Ring says in his paper, it certainly must have occurred in some of them. In some of the lists he further states incarceration of the iris was not mentioned, although it is doubtful if a hundred consecutive Græfe operations were ever done without a single incarceration. Therefore, the comparison between the prolapses in the simple, and the incarcerations in the combined method, is not a fair one. From Ring's data, however, the prolapses exceed the incarcerations by 3·84 per cent.

Strabismus.—Two important papers on the *results of the operations for strabismus* have appeared within the past year, one by Schweigger in the "Archives of Ophthalmology," (January, 1895), and the other by Bull, read before the American Ophthalmological Society, and since published in the "New York Medical Journal," (August, 24, 1895).

Schwiegger's method of performing tenotomy is to seize the conjunctiva over the insertion of the muscle, and make a small incision into which the forceps are introduced, the tendon grasped, and opened close to the insertion. Through this orifice a small blunt hook is passed, the tendon stretched and separated from the sclera with scissors. He insists upon seeing the insertion of the tendon, and considers separation perfect only when the hook can be passed up and down to the corneal margin. He believes that the best means to obviate sinking of the caruncle, is to divide the fibres passing from the internus to the caruncle.

For the measurement of squint, Schweigger prefers Græfe's method, that is, the squinting eye fixes a flame at 5 metres, and the zero point of the scale is brought beneath the corneal image of the flame. Next, the fixing eye is arranged for the same flame, and the examiner measures how far the middle of the pupil of the squinting eye has deviated from zero.

Schweigger believes that in the majority of cases periodic squint is removed by simple tenotomy, and that the return of periodic squint is usually prevented by the same procedure. As periodic squint passes gradually into permanent squint, according to this author, the cases most suited for tenotomy on the squinting eye are those which average a deviation of 4 mm. If there is failure to secure parallelism, a tenotomy on the fixing eye is indicated. If the operation on the squinting eye has failed, and tenotomy on the fixing eye is performed, Schweigger calculates on an effect of 4 to 5 mm., although the effect

may be less. Indeed, the result may simply be that a permanent squint becomes a periodic one, or that the deviation in periodic squint is less frequent, or, finally, the result may be *nil.* In double tenotomy of the interni, Schweigger has found the result to be about the same as tenotomy on each eye in succession. Sometimes the effect is slight, or it may be entirely wanting in spite of free separation of the tendon. In those cases in which advancement is subsequently done, the externus is often found to be defective, but, according to Schweigger, we may calculate on correcting a deviation of perhaps 5 mm. Gymnastic exercise of the muscles, by alternately turning the eyes to the right and the left, is advised as a useful preliminary to the operation for squint. This provides a good differential diagnostic point between failure of mobility and actual weakness of the externus. If it is the former, the exercise will increase the power to turn the eye outward ; if it is the latter, no such effect can be obtained. Information is thus given whether to tenotomise both interni, or to tenotomise one and advance the externus.

For a deviation of more than 5, or up to to 6 mm., according to Schweigger, double tenotomy is not sufficient, and advancement is needed. It is Schweigger's experience that advancement of the internus to relieve divergence without tenotomy of the externus is futile, an experience which must be in accord with that of most ophthalmic surgeons. He continues to employ his method of advancement, which consists of a free exposure of the muscle, and after the tendon is divided, a portion of the end is resected. Catgut sutures are employed to advance the muscle.

Space does not permit a complete analysis of Dr. Charles Stedman Bull's report on six hundred and twelve cases of convergent squint with special reference to the final results of operation, but it is a thoughtful paper deserving of study and attention.

No case of a patient under six years of age was included, owing to the difficulty of testing the refraction and obtaining anything like accurate ideas of the acuity of vision. In all cases of equal or approximately equal refraction full correction by glasses was ordered immediately after the operation, and these glasses the patients were directed to wear constantly for a varying length of time.

The general percentage of the final results was as follows: Resulting convergence in three hundred and fifty-seven cases, or about 50 per cent. ; resulting parallelism in two hundred and seventy-seven cases, or about 45 per cent. ; resulting divergence in thirty-two cases, or about 5 per cent.

There was an improvement in the visual acuity of the squinting eye

alone after the operation in seven cases. There was an improvement in the vision of the fellow eye alone in sixty-five cases. There was an improvement in the vision of both eyes in fourteen cases. A study of these cases has led Bull to the conclusion that the instances of improvement in the visual acuity were undoubted, but that while occurring after the operation they could not be considered as due to the operation, but rather to the stimulating beneficial effect induced by wearing the full correction of the refractive error. Concerning the same point, Schweigger writes as follows: "Cases of improved sight after the operation should be taken circumspectly, for squinters who have never learned to use the weaker eye for fixation often answer incorrectly. Only repeated and harmonious tests for far and near have any value. Personally, I have never seen any improvement in vision in a squinting eye after an operation, or even after separate exercising."

Bull's final conclusions are quoted in his own words :—

(1,) If the squint is in one eye, and of the alternating variety, there is usually very little amblyopia in either eye, and but little difference in the refractive error of the two eyes. In the majority of these cases free tenotomy of the internal rectus of the eye which usually squints, with immediate full correction of the refractive error, will give as a final result either apparent parallelism, or such a slight degree of convergence as is not noticeable under the glasses.

(2,) If the squint is always in the same eye, there is almost always a decided difference in the refraction of the two eyes, and a decided amblyopia in the squinting eye. In these cases, if there is no loss of power in the external rectus, the best results are gained by tenotomy of the internal rectus, and advancement of the external rectus of the squinting eye, and subsequent full correction by glasses.

(3,) If there is marked amblyopia in the squinting eye, and some loss of power in the external rectus of the same eye, the best operation will be found to be tenotomy of the internal rectus, and advancement of the external rectus of the squinting eye, and at a varying period later tenotomy of the internal rectus of the other eye. Simultaneous tenotomy of the internal rectus of both eyes and advancement of the external rectus of the squinting eye is not a desirable operation in these cases, as it too often leads to permanent divergence.

(4,) If, however, the squinting eye is markedly amblyopic, and the external rectus of this eye is entirely paralyzed, the best results are gained by a simultaneous tenotomy of the internal rectus of both eyes, and advancement of the external rectus of the squinting eye.

(5,) In the emmetropic cases, fifteen in number, the best results

were gained by tenotomy of the internal rectus of the squinting eye, followed at a varying period by tenotomy of the internal rectus of the other eye. The reason for this is not as yet apparent.

(6,) There will always be a number of cases, by no means inconsiderable, in which it will be impossible to decide in advance what method of operating will be likely to give the best results, and in which what we do will be more or less a matter of guess-work.

(7,) Any complication which interferes with the visual acuity of a squinting eye, such as corneal maculæ, striæ in the lens, or extensive choroidal atrophy, must be regarded as pointing to the necessity of more extensive operative interference than simple tenotomy, even when no great refractive difference exists between the eyes, and when no paresis of the external rectus is present.

Dr. H. F. Hansell has during the past year published several papers upon internal strabismus, or esotropia, as he prefers to call it, particularly dwelling upon the fact that lateral strabismus is always accompanied by some upward rotation of the cornea.

Hansell's views are briefly summarized in the following paragraphs:—

Functional internal squint, or esotropia, is properly considered under two classes, namely, the constant or monocular, in which one eye always squints and the other always fixes, and the alternating or concomitant, in which either eye is used indifferently for fixation, and the squint is transferable.

Monocular.—The vision of the squinting eye is inferior to that of the fixing eye. The cornea is never turned directly inward, but it is rotated inward and upward. The amblyopia of the squinting eye is congenital and not acquired; is not improved by tenotomy when high or of long duration; is always present in monocular squint; is not a factor in alternating squint; can be replaced by full acuity of vision after the hitherto good eye has been rendered by accident or disease inferior to the squinting eye.

At the time of development of esotropia means should be taken to cultivate the vision of the defective eye. Tenotomy is unsatisfactory in its results. Binocular fixation is seldom, if ever, secured. If surgical treatment is advisable, tenotomy of the superior rectus of the squinting eye, of both interni, with advancement of the external rectus of the squinting eye, is to be recommended.

Alternating.—The cornea of the non-fixing eye is turned upwards as well as inward, and with transference of fixation there will be a transference of both the upward and inward deviation.

If the esotropia persists after atropinization and the wearing of, as

near as possible, full correction of the optical defect which, in the great majority of cases, is between two and four dioptres of hypermetropia, tenotomy of both interni should be performed.

Donder's theory, extended to include all the muscles stimulated by the third nerve, is a sufficiently satisfactory explanation of the upward deviation.

According to Schweigger, vertical deviation occurs frequently with lateral strabismus, and disappears after the removal of the latter. Hence, after operations for convergent squint it is not uncommon to see a vertical deviation, which not only was not observed before the tenotomy, but which did not exist. He further believes that the frequency of the latter occurrence is responsible for the surgical rule, that with vertical and lateral deviations the lateral deviation should first be corrected. If the vertical deviation now remains it may be attacked at a subsequent date. Although in most cases of strabismus the squinting eye deviates upwards as well as inward, Schweigger has seen it deviate downward. Upward deviation without lateral strabismus is a rare occurrence, but is occasionally seen, and one case is reported in Schweigger's article.

Somewhat bearing upon the question whether there is improvement of vision in squinting eyes after operation, or by separate exercises, are the examinations[24] which I have made of the field of vision of these "neglected eyes," particularly with reference to the centre of the visual field in regard to colour perception, or the presence or absence of scotomas; in other words, a line of research which is particularly commended by Dr. Henry D. Noyes in his well-known work on ophthalmology.

An examination of a number of cases of squinting eyes seemed to develop three groups, namely, those in which the visual field for form and colours is normal, and the accuracy of colour perception at the macula is unaffected; those in which there is contraction of one or more of the colour fields, the form field remaining normal, or in which there is irregular contraction of both form and colour fields, sometimes associated with reversal of the red and blue lines; finally, those cases with or without contraction of the form and colour fields, but with diminished central colour perception at the point of fixation, surrounding it, or between it and the blind spot, or finally, with scotomata, especially for colours. Cases with normal visual fields and good colour perception seemed capable of acquiring increased visual acuity, but in those with areas of diminished colour perception, or scotomata in the centre of the field of vision, the visual acuity did not improve. It was suggested that examinations of this kind should

always be performed, as has been especially urged by Dr. Noyes, and that through such examinations data might be obtained which would lead to more certain prognostications as to the result of exercising the visual functions than we now possess, or at least than the records seem to show we possess.

Entropion.—The reconstruction of the lid border in *entropion of the upper lid* is a problem which has attracted the attention of ophthalmic surgeons for many years, and numerous modifications since Spencer Watson's first trial in 1873 have appeared. We are indebted to Dr. F. C. Hotz, of Chicago, for much valuable work in relation to the plastic surgery of the eyelids, and naturally any operation recommended by this surgeon is worthy of study and adoption. In the "Annals of Ophthalmology and Otology" (July, 1895), he describes his method of dealing with cases of entropion of the upper lid as follows: The lid border is split by the well-known intermarginal incision to a sufficient depth to permit easy eversion of the anterior edge of the ciliary margin. A tranverse incision is now made through the lid skin and orbicularis muscle, just below and parallel with the upper line of the tarsal cartilage. The strip of muscular fibres which covers the upper border of the cartilage is excised, and the lid skin is united wtth the upper border of the cartilage by three sutures. One suture is placed at the centre of the wound, and one at either side of the central one. Each suture passes through the edge of the lid skin, next through the upper border of the cartilage, and finally through the upper edge of the skin wound. When these sutures are tied, the lid skin is drawn upward and fastened to the upper border of the tarsus. This converts the intermarginal incision into a gaping wound several millimètres in depth and with sloping sides. This growth is filled by a skin graft, much thicker than the ordinary Thiersch shaving, which Dr. Hotz is accustomed to take from the skin behind the ear. The strip is cut as follows: A longitudinal incision is made 1 mm. deep, and of the same length as the graft. A second incision is made parallel to the first one at a distance of 2 mm. This joins the first incision at both ends in a somewhat slanting direction; the narrow wedge-shaped strip of skin between these two incisions is dissected and transplanted directly from the wound to the lid border, spread out, gently pressed into place, and thoroughly irrigated with normal salt solution. Both eyes are covered with compresses and bandage for twenty-four hours, at the end of which time the graft is sufficiently attached to discontinue the dressing. During the first two weeks the epidermis of the graft is repeatedly shed, and it is therefore advisable to keep the new lid border anointed with vaseline.

One objection which has been urged against a transplantation of this character is that fine hairs growing from the new skin may irritate the eye. Hotz's experience has taught him to regard this as a needless objection, and he believes that when hairs are found in these grafts they come not from the transplanted skin, but from the posterior edge of the lid border, and represent cilia which were left in this position. I have performed this operation with satisfactory results.

Ptosis.—Dr. Mules [25] contributes further experience of a satisfactory character with his operation for *ptosis*, which was first described at the International Congress of Ophthalmology in Edinburgh, in 1894. It will be remembered that the principle of this operation was to substitute the frontalis muscle for the levator palpebræ by extending the former muscle to the margin of the lid by a permanent wire suture. Dr. Mules has tried various kinds of wire, but has found that silver wire answers the most satisfactory purpose.

Exophthalmos.—Recently [26] I have had the opportunity of studying a case of *bilateral exophthalmos*, the probable result of traumatic intracranial arterio-venous aneurism. The man was severely injured in a mine, and three weeks after the injury the exophthalmos began, and soon became associated with enormous hyperæmia of the veins of the eyeball, passive congestion of the retinal circulation, later hæmorrhagic neuro-retinitis, and roaring in the head. All over the cranium there was a well marked systolic murmur, most noticeable upon the right side. The usual phenomenon of pulsation was not present; deep pressure upon the eyeball gave the sense of impulse that is not present in the normal globe. In connection with this case the literature of the subject was thoroughly reviewed, that is to say, the literature not included in the lists previously published, namely, those of Sattler, Frost, Kœler, Nieden, and Le Fort. I succeeding in finding thirty-eight cases, making the grand total thus far recorded one hundred and eighty-two, of which traumatism has been responsible for fully 60 per cent., or one hundred and ten times in the one hundred and eighty-two records.

Ligation of the common carotid for the cure of pulsating exophthalmos due to aneurismal varix, or, indeed, true aneurism, was performed on sixty-three of the one hundred and six cases in Sattler's collection, on eighteen of the thirty-eight in Nieden's list, and on twenty-three of the thirty-eight in my analysis, or on one hundred and three among the one hundred and eighty-two cases, that is to say, on a little over 50 per cent. of them. Excluding pulsating angioma and sarcoma, there were eight deaths among Sattler's sixty-three cases, or 12·7 per cent.; Nieden found three fatal cases, but their deaths, according to

him, are not attributable to the operation. In my own collection of twenty-two operations there were no deaths. Granting that the three deaths which Nieden records were due to the operation, although the reporter contends they were not, we have but eleven deaths in one hundred and three operations of ligature of the primary carotid for the relief of pulsating exophthalmos, or, in other words, a mortality of about 10 per cent. It should be remembered, however, that the earlier operations were done without the advantages of aseptic surgery, hence the mortality is higher. Thus, following the operations performed since 1880, thirty-nine in number on seventy-five cases, there has not been a single death, provided it is admitted that the three fatalities found in Nieden's collection should not be attributed to the operation. There is no doubt that since 1886, among twenty-two cases of ligature of the common carotid, there has been no death.

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Synopsis.—(Vol. 1895, p. 260.) Intra-ocular injections are still *sub judice*. Asthenopia is assisted by **Iodide** and **Bromide of Sodium and Potassium**, **Iodine of Iron**, alteratives generally, **Ergot**, and probably **Cannabis Indica**. In optic atrophy, **Strychnine**, **Phosphorus** and its compounds, **Nitrate of Silver**, **Antipyrin**, the alteratives, and probably **Nitroglycerine**, call for attention, and **Nitrite of Amyl** may assist. Electricity is doubtful, but the use of the **Continuous Current** may prove beneficial. **Corrosive Sublimate** is the chief constituent of the most recent collyria.

FAVUS.

P. G. Unna, M.D., Hamburg.
Norman Walker, M.D., Edinburgh.

Besnier[1] recommends that the hair be cut very short, and epilated. He uses an ointment with **Resorcin**, **Salicylic** and **Sulphur** at night, paints with **Iodine** every two or three days, and washes the head daily with soap and water. The duration of the cure is many months.

Gouladze[2] treats it with **Shaving**, washing with **Green Soap**, and the application of a liniment composed of **Thymol, Chloroform** and **Olive Oil**. For some time after apparent cure, he paints daily with **Iodine** and **Glycerine**.

Zinnser[3] has experimented in Berne on the effect of **Heat** in the treatment of favus. He kept the heat of the application at about 150° F. and the application was continued for twelve hours a day for ten days. In three cases the result was complete and permanent cure. The *rationale* of the treatment is that the favus fungus will not stand high temperatures, and although the treatment is severe and probably not many patients in this country could be got to submit to it, one is always glad of any suggestions in the treatment of this most obstinate disease. Nothing but perseverance will cure favus, though if the disease is recognized *early*, the parts thoroughly epilated, and some antiseptic well rubbed in, a cure is easily attained.

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FEVER (Indian Remittent).

N. C. Mitra, M.A., M.B., Ranchi, Bengal.

Non-malarial remittent fever is a disease peculiar to India, as no European text-books make any mention of it.

As regards ætiology, nothing definite has yet been arrived at. Many are of opinion that it has a specific origin in consideration of its distinct periodicity.

Varieties :—(1,) Simple ; (2,) Adynamic or low ; (3,) Irritative, abdominal or typho-remittent; (4,) Malignant.

Dr. Crombie recognizes five distinct types : (1,) Simple continued; (2,) Non-malarial remittent ; (3,) Typhoid ; (4,) "Calcutta and Bombay Fever" ; (5,) Low fever.

This division he makes of "Indian continued fever." Leaving out "typhoid" from the list, as it is in no way Indian, there are, according to him, four varieties.

Symptoms of Simple Remittent Fever.—There is no premonitory rigor or chilliness. The temperature gradually rises till it reaches 103-4°F., or it may go up to 105-6°F. There is a distinct morning remission, the temperature varying from 101-3°F. The evening exacerbation creeps on quite slowly, so that the patient is not aware of it. No rigor precedes it. The higher the temperature, the more restless the patient becomes, and occasionally he is delirious. As fever progresses, there is gradual prostration and loss of strength. Bronchitis may develop. The tongue is furred. The bowels are, as a rule

confined. Headache is troublesome proportionately with the rise of temperature. Occasionally, the bowels may be loose from irritation in the intestinal canal. The liver is sometimes congested, and this is generally met with in children. The temperature may go down by crisis or lysis. Sometimes, the patient becomes very weak, and loses flesh considerably, the tongue becomes dry, the lips covered with sordes, the pulse small and soft; there is picking of the bed clothes and muttering delirium, and general symptoms of failure of the nervous and circulatory systems.

In the *adynamic* or *low* form, the evening temperature is between 102-3°F., while that of the morning rarely exceeds 101°F. From the beginning there are low nervous symptoms, and within a short time the patient is delirious—the delirium being at first of a noisy character, but very soon merging into a muttering one. As the disease progresses he sinks into such a state of apathy that no answers can be elicited even when he is loudly spoken to. Oftentimes the eyes are closed; at others, half closed, in a state of *coma-vigil.* The pulse is small, quick and compressible. The extremities are in many cases cold, while the internal temperature may be at 102°F., and this is often a cause for anxiety, as being premonitory of collapse, but such is not always the case, since it may arise from a defective circulation, consequent upon capillary stasis leading to imperfect oxidation and generation of heat. The pupils are always dilated, the tongue dry and coated, and the bowels constipated. Gradually, loss of consciousness develops, and coma follows.

Irritative, *abdominal* or *typho-remittent* resembles the simple remittent in all respects, excepting that early in the attack are observed evidences of irritation in the intestinal tract, developing acute inflammatory diarrhœa. Many practitioners confound this fever with typhoid fever, and go so far as to diagnose it as such. There is no pain or gurgling, but there is manifest tenderness over the whole abdomen, though nowhere distinctly localized. The stools, often watery, may have a peculiar smell. These are yellowish or greenish in colour, and are often passed involuntarily. There is tympanites, the intestines becoming distended with gas to such an extent as to interfere with free respiration. There are no eruptions, no gurgling or tenderness in the right iliac region; the tongue is not characteristic of *typhoid*, nor are the temperature or the stools.

Malignant remittent is but rarely met with. Here, the fever is always of a low type, and the patient loses strength and flesh in a short time. In a few days there are signs of collapse; the pulse is small and fluttering; the tongue dry, fissured, or cracked, and black;

the stools bloody and loose; the vomited matters sanguineous in character; petechiæ are seen all over the body, and there may be jaundice as well. These cases, almost without exception, are fatal.

There is another form of this class which, though not characterized by such ominous signs, is, nevertheless, not a whit less unfortunate in termination, patients succumbing in from thirty-six to seventy-two hours.

During the autumn of 1874, I encountered a few of these cases. Within twelve hours of the attack the patient became delirious; a few hours later he was semi-conscious, and before twenty-four hours had elapsed he sank into a state of profound coma from which he could not be aroused, and which gradually terminated in death.

Among complications and sequelæ peculiar to all forms of Indian remittent, are affections of the respiratory tract, such as bronchitis, pneumonia or pleurisy, diarrhœa and dysentery, congestion of the liver, enteritis, inflammation of the auditory passage, ending in chronic otorrhœa. Parotitis, abscesses, or a general state of ill-health, are also noted.

The marked peculiarity of the disease lies in its *duration* and *termination*. The average period is twenty-one days, and so nearly universal is this the case, that in Calcutta, Indian remittent fever obtains the popular designation of "three-weeks' fever," and yet it may end in one or two weeks, or may even be prolonged to forty or sixty days. In nearly all cases the temperature persistently remains elevated until the eighteenth or nineteenth day. I have observed it to be as high as 105°F. at the end of the fifth week. It may terminate by *crisis*, with profuse perspiration or diarrhœa, but the ending is more commonly by *lysis*, the morning remission continuing longer, and the evening exacerbation being late and for a shorter period. Recovery is the rule in the milder forms, except in patients of debilitated constitutions.

Mistakes are often made in diagnosis. Some go so far as to assert that remittent fevers in Europeans are nothing but typhoid ones. The characteristic colour and consistence of stools, the eruptions and the temperature are sufficient landmarks to distinguish typhoid fever from this. Indian remittent fever may be distinguished from *malarial* remittent by the fact that the latter is always preceded by a feeling of coldness or shivering, that the afternoon exacerbation comes on at a fixed time, that the patient comes from a malarial district, and that the disease is amenable to the influence of quinine. It is quite possible that some of the typho-remittent cases are masked types of true typhoid, but in the absence of any characteristic symptoms, they

cannot well be classed as such ; often only the post-mortem table reveals the true character. The chief indications of danger are: excessive diarrhœa, low muttering delirium, pneumonia or extensive bronchitis. The prognosis is bad in cases of broken-down health, in old people and infants, and in the malignant form. Relapses are very common.

TREATMENT.—This is mostly symptomatic. The most important point is to look to the temperature ; as the nervous system seriously suffers from prolonged exposure, the temperature ought to be kept down as soon as it rises above 103°F. Warm baths are often held highly objectionable by natives, and, indeed, are impracticable in many cases. The antipyretic mostly used is **Phenacetin** which in 8-grain doses will induce perspiration. This drug is quite harmless, and has never been known to produce injurious results. Its effect persists for at least six hours ; the delirium which accompanies high temperature passes away, the patient goes into a calm and refreshing sleep, and in two hours is bathed in profuse perspiration. Indians bear **Antipyrin** badly, so that great care is required in administering this drug, which, if given in full dose, is apt to bring on a fatal collapse. **Antifebrin** is better than antipyrin—but occasionally untoward effects have been noticed after its administration, so that it is advisable not to prescribe it in private practice. Sometimes it has been noticed that phenacetin is not efficient in bringing down the temperature, which may stand at 101 or 102°F. although there is profuse perspiration. In such cases in addition to phenacetin, I prescribe **Tincture of Aconite** and **Salicylate of Soda** with the best results. If the bowels are constipated, a saline draught may be ordered. If the patient complains of sleeplessness at night, **Bromide** may be prescribed with **Chloral,** or 20 grains of **Sulphonal** in tepid water may be given. If headache is severe and bromide with phenacetin or lactophenin does not diminish it, a **Cantharidal Plaster** acts like a charm. If there is diarrhœa from the beginning, the stools should be carefully examined for any indication of irritation in the bowels ; moderate diarrhœa need not be interfered with. Bronchitis is to be treated on general principles by fomentation and expectorants. Towards the later stage of the disease, stimulants should be prescribed as soon as any symptoms of cardiac failure supervene, as indicated by softness and frequency of the pulse. Special care should be taken in adynamic remittent in which there are evidences from the beginning of failure of the nervous and circulatory systems. Here a **Fly Blister** to the nape of the neck or back of the ears is of benefit ; at the same time the bowels should be thoroughly cleared by means of **Calomel,** followed,

if necessary, by an enema of soap and water. Then begin treatment with **Spirit, Musk,** and diffusible stimulants administered every hour or half-an-hour, as circumstances may dictate. As the extremities are invariably cold, apply **Ginger-powder Friction** over the toes and fingers. In the worst cases, as much as 4 to 5 ounces of **Brandy** may be given with impunity and decided advantage during the first twenty-four hours, and if desired it may be mixed with meat extract.

In the case of *typho-remittent*, the only treatment in addition to the foregoing, that is worthy of special mention, is the application of **Glycerine** and **Belladonna Extract** over the abdomen, in turn with **Linseed Meal Poultices** every three hours. As astringents are apt to irritate the bowels, they are best avoided, but **Bismuth** in 10-grain doses is useful.

In *malignant* forms, a **Sinapism** over the precordial region, and constant recourse to stimulants, are to be recommended as early as possible, and to these **Digitalis** should be added. The treatment advocated by many, of administering quinine as soon as the temperature has been brought down to normal, is quite futile in Indian remittent fever, which has a fixed duration of its own. Quinine is not only of no use, but is distinctly harmful, as it tends to produce delirium, and sets up irritation in the stomach and bowels. I know of a case in which quinine used in this way produced such obstinate hiccough that life was despaired of.

During convalescence, the patient should be put on tonics of quinine and iron, and as relapses are very common great care should be taken as to the diet, which should be nutritious and easily assimilated.

REFERENCES.—Crombie, Pres. address medicine, Indian Med. Congress, "Indian Medical Gazette," Jan., 1895; "Medical Reporter," Nov., 1892; "Medical Age," Jan., 1895.

FEVER (Indian Typhoid). *N. C. Mitra, M.A., M.B., Ranchi, Bengal.*

By the term, "Indian Typhoid Fever," I mean typhoid fever as it occurs among the natives of India. It is still a debatable point whether natives of India are equally predisposed to the influences as those of temperate climates. Some (and among these Dr. Crombie especially) go so far as to say that the natives of India enjoy an immunity from attacks of typhoid fever. Dr. Crombie bases his opinion upon statistics from hospital records and private practice, extending over a long period. Drs. Pilgrim and Bose give it as their opinion that natives of India enjoy no such immunity.

The diagnosis in these cases is difficult, as typical cases are

rarely met with, but careful *post-mortem* examination of fatal cases would be most valuable if regularly carried out.

Eruptions are, as a rule, never present. The temperature is never so typical as one expects to find in typhoid fever, the tongue is not characteristic, the duration varies, sometimes there is diarrhœa, at other times constipation. The stools are not characteristic. It is only by combining all the symptoms that an approach to a correct diagnosis can be arrived at.

During the autumn of 1892, I treated seven cases which I diagnosed as typhoid fever. In one there was an eruption on the twenty-second day of the relapse—a somewhat unusual phenomenon, and the patient died suddenly from intestinal perforation. In none of the rest did I find any eruptions. The duration was from three to four weeks.

There was nothing particular in the treatment. The temperature was kept down by **Phenacetin.** Diarrhœa was treated by fomentations and poultices and internal use of **Bismuth.** Quinine was never given. Other symptoms were treated on general principles.

REFERENCES.—"Indian Med. Gaz.," May, 1893; "Ibid.," April, 1894; "Medical Reporter," March, 1893.

FEVER (NÁKRÁ) (Indian Nasa).

N. C. Mitra, M.A., M.B., Ranchi, Bengal.

Pathology and Anatomical Characters.—This is a congestive condition of the brain, with the local manifestation of congestion or turgescence of the blood vessels of the Schneiderian membrane.

Násá fever is fever due to a peculiar affection of the nasal cavity (Nasa, meaning nose).

This fever is common in India, and seems not to be seen in Europe or America, as no description of such is found in any text-book.

Opinions are still divided as to the exact pathology of the disease. Some consider it to be a catarrhal condition of the nasal mucous membrane. There appears a small localized red swelling of the size of a big pea, confined for the most part to one or both sides of the septum. This swelling is not an inflammatory one. It fluctuates on pressure, and is not painful in the least. Simultaneously with the appearance of the swelling, the patient suffers from an attack of fever. The fever is of a remittent type, sometimes it is intermittent. The temperature in the evening rarely rises above 102° F., occasionally it may go up to 105° F., whereas in the morning it may become normal or a little above. The accessory symptoms are

very troublesome. These may be described as : excessive frontal headache, a sensation of heaviness all over the head, and pain all along the spinal column, both the shoulders and the back of the neck. The strangest thing is that the patient is quite unaware of any such swelling, as no uneasy sensation is complained of by him. It has not yet been definitely worked out whether the swelling and the fever appear simultaneously, or whether the fever *follows*, or *precedes*, the swelling. Nor has the time been noted when the swelling makes its appearance, as no diagnostic symptoms are present in the beginning. There is all along a sensation of *malaise*. The bowels are costive, the tongue coated, and the appetite dull. The patient feels feverish. The fever is, at first, slight. Gradually it increases and lingers on, without any definite duration. But, generally, the high temperature continues from three to five days. The swelling never suppurates, and if left to itself it might disappear, but it causes much suffering to the patient before it goes away.

Diagnosis.—As the patient does not complain of any pain or uneasiness at the site of the swelling it is very difficult at first to come to a correct diagnosis. The lingering pains in the head and back, and general *malaise*, without the presence of any organic affection to account for, should raise suspicion. When once the nostrils are examined, the disease is diagnosed at once, and old sufferers at once resort to the help of a medical man to have the nose examined whenever they are troubled with such symptoms. Medical men often mistake the symptoms for those of a fever, and treat them accordingly, but without the slightest benefit.

TREATMENT.—Internal treatment is of no avail in stopping the course of the fever. Quinine or arsenic has not the slightest effect. Some have found **Bromide, Chloral, Cannabis-Indica** and **Caffein Citras**, of great use in relieving the pain. Dr. J. B. Boxe, of Calcutta, recommends **Tartar Emetic. Cold Affusion** sometimes does good. But the treatment I am in favour of is simply local. **Puncturing** the swelling is followed by hæmorrhage. The patient experiences great relief. The pain rapidly diminishes. The fever goes off in a day or two, and the patient is practically well. The puncture must be made rather freely, otherwise the opening closes up and the operation has to be repeated a day or two later. But most people object to this treatment, as they do not like puncturing whenever they get an attack of *násá*. They prefer **Caustic** to puncturing. The caustic used is **Nitrate of Silver,** or more commonly the milky juice of **Akanda** (Mudár) *Calotropis Gigantea*, natural order, *Asclepiadaceæ*. This plant is very common in India.

REFERENCES.—Ghosal and Mitra, "Medical Reporter," Nov., 1893; Ibid., March and May, 1894; Transactions Indian Medical Congress, 1894.

FILARIA MEDINENSIS (Guinea Worm Disease).

Synopsis.—(Vol. 1895, p. 273.) Manson advises protecting the site by water dressing; pour on cold water two or three times a day to encourage parturition, after which the worm is discharged spontaneously. Vinze extracts the worm by an incision, but this is hazardous. Forbes orders as prophylactic that all drinking and cooking water should be boiled for a quarter of an hour, filtered, and a little **Citric Acid** added; he also speaks of small doses of **Precipitated Sulphur** as useful and curative. Roth treats chronic cases by laying open the burrows freely, and inserting strips of lint soaked in **Carbolic Acid Lotion**, 1 in 15; oiled silk, wool and a tight bandage complete the dressing; if burrows cannot be opened he applies compresses of the lotion. Emily claims to cure cases in three or four days by injections of 1 in 1000 **Perchloride of Mercury Solution** inserted round the site by several punctures, or into the body of the worm if it is partially protruded. Randle applies **Carbolized Poultices** made by adding **Carbolic Oil**, 1 in 15, to **Linseed Meal**, etc., then extracts by rolling on a quill and making pressure around. If the worm breaks, he poultices and uses **Paget's Knife** freely.

FISSURE AND PAINFUL IRRITABLE ULCER (of the Rectum).

Herbert William Allingham, F.R.C.S., Eng.

Fissure or ulcer may be brought about by an injury to the mucous membrane at the verge of the anus, *viz.*, from straining, the passage of very dry, hard motions, or diarrhœa. Other causes are rectal polypi, syphilis, congenital narrowness of the anal orifice, frequently found in children, a hypertrophical condition of the sphincters, labour, and uterine displacements.

Generally speaking, the small circular ulcer is found above or about the lower edge of the internal sphincter, while the place of the fissure is usually about the junction of the mucous membrane with the skin. These may vary in size, condition, and position.

The complaint is frequently thought to be piles, the symptoms being a discharge of blood and matter, a swelling outside the bowel, and pain at stool. The pain, or rather defæcation, is often excruciating, like the tearing open of a wound. Hence, patients postpone the action of the bowels as long as possible, with the consequence that the motions become hardened and even more painful to pass. A small fissure near the anus may be much more painful than a large ulcer higher up the rectum, on account of the nerve supply about the anus. Hence arise many anomalous symptoms.

The finger must be introduced into the bowel to discover the position and the cause of the fissure or ulcer. The ulcer feels like the internal aperture of a fistula, but the edges are harder and more defined.

In children and young people, fissure, if not complicated by polypus, etc., is generally cured without operation by the use of ointments and mild laxatives.

In children with hereditary syphilis, anti-syphilitic treatment may be necessary. In adults, when the fissure is of recent formation, it may be cured by rest in the recumbent position, mild laxatives, and soothing ointments, or lotions. It is wise to have the bowels act last thing at night, for the rest is beneficial.

If the base of the ulcer be grey and hard, and the finger, when inserted into the bowel, finds the sphincter spasmodically contracted, operative treatment to prevent all action of the muscle is necessary. This premises that any polypi and so forth have been removed. The two methods of operating are by *incision* or *dilatation* of the sphincter muscle.

It is best to incise ulcers situated about the internal sphincter, for, by a complete division of the external sphincter, a somewhat lengthy paralysis of the muscle is obtained, and motions cannot be retained in the ulcer. Division is likewise best with old, large, or indurated fissures about the external sphincter, and when the complaint is complicated with piles or fistula. A fairly free incision heals as quickly as a small one, and it is much better to cut rather too deeply than too superficially.

The dilatation of the sphincter by the use of the thumbs and fingers requires the administration of an anæsthetic. It may be employed on simple fissures about the verge of the anus over the external sphincter. It is the safest operation for old, weak, or phthisical patients, and for children who have congenital narrowness of the anus. It can also be employed to cure a fissure after polypi or polypoid growths have been removed.

FISTULA (in Ano). *Herbert William Allingham, F.R.C.S., Eng.*

Mr. Pitts[1] has described a method of cutting the fistula out and sewing the edges of the wound thus made. This is done in the hope of obtaining immediate union.

For the purpose of facilitating the introduction of a filiform bougie through a fistulous tract, Dr. H. O. Walker[2] has devised a tunnelled fistulatome, which is merely the addition of a tunnelled end to a large curved bistoury.

Dr. Pennington[3] relates a method of operating upon the so-called "horse-shoe" fistula. He passes a probe-jointed director through the internal opening, and on its point, in the median line behind, incises the skin. He then severs the tissues over it. Directors are then passed in at the external openings and out at the dorsal incision,

and the tissues are divided. Thus, the sphincter has to be divided only once, and then at right angles. In many cases he does not divide the sphincter. After dividing the skin he withdraws the director and curettes the sinus thoroughly, and then divides the other tracks, as described above. He thus severs the attachment of the sphincter to the coccyx. The muscle is then pulled in and upwards, which brings the walls of the curetted dorsal tract in juxtaposition, and they will unite, completely obliterating it.

REFERENCES.—[1] "Lancet," May 18, 1895; [2] "Mathew's Med. Quarterly," Oct., 1894; [3]Ibid., April, 1895.

FISTULÆ (Vesico-Utero-Vaginal).

Theophilus Parvin, M.D., Philadelphia.

At the Bordeaux Congress, Lannelongue and Faguet reported success, operating with the patient in the genu-pectoral position, and employing local anæsthesia with cocaine.

FRECKLES. *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

These can be removed by the application every other day of an ointment of **Hydrarg. Ammoniat.** and **Bismuth Subnitr.** āā 1 drachm to the ounce.

Freckles and Chloasma.—The former may be removed[1] by the following: **Sublimate** gr. 4 to 15, **Extr. Hamamelis, Glycerine** and **Alcohol** āā 1½ ozs. As soon as pronounced irritation appears, **Zinc Ointment** should be applied. In the latter, **Sublimate** gr. 9, **Ammon. Chloride** 1 drachm, **Alcohol** 1½ ozs. and **Extr. Hamamelis** has been used with success.

REFERENCE.—[1] "Wien. Med. Presse," No. 43, 1894.

FRIEDREICH'S DISEASE.

Synopsis.—(Vol. 1895, p. 288.) **Arsenic** and **Nitrate of Silver** are recommended, also **Cod-liver Oil.** Good diet, healthy surroundings assist.

FURUNCULOSIS. *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

Brocq[1] refers to the treatment of this condition by **Colchicum.** He finds the results sometimes most remarkable, improvement commencing on the sixth day. Locally he uses daily, a lotion with **Camphorated Alcohol** over the whole body, and, on the boils themselves, **Vidal's Red Plaster.** The method is of little use in cases which complicate eczema or sycosis, but is evidently worth trial.

Powdered Nutmegs are recommended for the same purpose by a very eminent authority.

Erenberg believes in feeding, cleanliness, and the application of a solution of **Boric** and **Salicylic Acid.** The necrotic plug is to be removed by incision, as soon as it is defined. He considers it important not to incise sooner.

Lowenberg[2] recommends the **Galvano-cautery** to abort furuncle. A fine point is made to penetrate the centre of the follicle. It is best applied before suppuration begins. The thermo-cautery is more painful.

REFERENCES.—[1] "Journ. of Cut. Diseases"; [2] "Bull. Med.," 1894, No. 36.

Synopsis.—(Vol. 1895, p. 289.) Van Hoorn washes the whole body with **Potash Soap**, and then cleanses with 1 in 1000 **Sublimate Solution**, dressing the boils daily with a **Mercury** and **Carbolic Acid Plaster.** Allan Jamieson uses **Ichthyol Varnish** as an abortive. Debouzy commends **Yeast. Chlorate of Potash** with **Lactate of Iron** have proved useful internally. Sir. J Paget mentions **Quinine** for malarial cases; **Liquor Potassæ** for gouty or eczematous cases; and **Yeast.**

GALACTORRHŒA (Obstinate).

Theophilus Parvin, M.D., Philadelphia.

G. von Tussenbroek reports in a recent Holland journal, a case of obstinate galactorrhœa, in which all medicines had failed, and the patient being greatly exhausted by the abundant secretion, extirpation of the mammary glands was employed. The patient was soon restored to perfect health.

The histological examination of the organs removed, proved that there were no lesions, the disease being simply an exaggeration of the normal secretion.

GALL BLADDER (Surgery of). *A. W. Mayo Robson, F.R.C.S.*

A largely increased experience since the paper I read at the International Congress, at Rome, based on seventy-eight operations on the gall bladder or bile ducts, leads me to say that there are very few cases of gall stones which cannot be treated by cholecystotomy, if needful, supplemented by cholelithotrity, the latter procedure being very occasionally assisted by needling the concretion. One of the arguments made use of by Dr. Murphy, of Chicago, that cholecystotomy is frequently followed by biliary fistula, is quite contrary to my experience, and I cannot agree with him as to the desirability of performing cholecystenterostomy in gall stone operations, except the patient be too ill to bear a long operation, or the cause of the obstruction be really irremovable. Of the six cholecystenterostomies that I have performed, all have recovered; in three I used the bone bobbin, and in three the metal button, and in this operation I prefer the latter.

M. Tuffier[1] proposes to reach the common duct from the right loin, a procedure I should think scarcely likely to find many advocates. He says that the many difficulties and dangers which he had met with in the performance of operations upon the biliary passages had induced him to suggest a new method of operation which he thought was applicable to cases in which the common duct was the seat of lesion. The method was suggested to him by an experience which he had when exploring a tumour in the renal region through a lumbar incision. After the right kidney had been fixed to the ribs, the common bile duct and the gall bladder (both of which were filled with biliary calculi) were easily felt as a tumour, immediately in front of the kidney. This induced him to carry out a series of researches upon the dead body, from which he drew the following conclusions: He says that the common bile duct, the second portion of the duodenum, and the posterior surface of the pancreas lie outside the peritoneum, and on this account the common bile duct can be exposed by the following surgical procedure: The patient is placed on his left side, a pillow having been placed underneath the loin. An incision is made parallel to the twelfth rib, and one finger's breadth below its lower border, commencing at the angle, and passing inwards for about 15cm., and is deepened until the lower extremity of the right kidney is defined; this is pushed upwards with a broad retractor. The inferior vena cava is raised and pushed inwards, and the second portion of the duodenum along with the head of the pancreas is drawn outwards. By means of the finger a cord can now be felt at the bottom of the wound, which passes upwards, and consists of the common bile duct and its accompanying vessels. By careful dissection that portion of the common bile duct which lies in the pancreas and behind the duodenum can be isolated and examined. The author has performed this operation in ten bodies, and in no case failed to find the duct. This method of operation is also suggested as being a possible way of evacuating purulent foci situated in the pancreas. In the discussion which followed the paper, many anatomical objections were raised as regards the possibility of performing the operation. The most important of these was the liability to injure the inferior vena cava, the pancreas, the portal vein, or the hepatic artery.

Dr. T. A. McGraw,[2] in an article on treatment of obstruction of the gall duct, raises salient objections to the common use of cholecystenterostomy (in America) for obstructive jaundice due to occlusion of the common duct by calculi.

He says of this method: It leaves behind a focus of irritation which may develop into a condition of danger, and however im-

portant it is to relieve pain, our surgery should aim at something more.

Again : There is evidently in this operation a firm adhesion established between the gall bladder and bowel ; the adhesions produced by gall stones are often more serious, and cause more disturbance than the passage of the gall stones themselves.

Block[3] describes a new method of performing cholecystotomy, devised with the view of avoiding on the one hand peritonitis, which, he states (but which we do not find to be the case), often results from the giving way of sutures after immediate closure of the wound in the gall bladder, and, on the other hand, the formation of firm adhesions between the gall bladder and the abdominal wall after the establishment of a temporary fistula. In the method called extra-abdominal cholecystotomy, which is advocated by the author, and was successfully practised by him in a case recorded in his paper, the distended gall bladder is drawn through the abdominal wound, and a portion about the size of a hen's egg outside this wound by sutures, until adhesions have formed, and the peritoneal cavity has been closed. The gall bladder is then opened, and any gall stones it may contain are removed. The wound in its coats having been closed by sutures, the gall bladder, after a further interval to allow of complete cicatrisation, is separated from the margins of the incision in the abdominal wall, and returned into the peritoneal cavity, the external wound being finally closed.

This operation, *à deux temps*, has been previously tried and given up for obvious reasons.

Dr. J. W. Elliott[4] believes that cholecystotomy and cholecystenterostomy have become too much the routine practice in the relief of gall stones, and holds out that incision of the ducts or the gall-bladder followed by immediate suture is the proper operation in the majority of cases, and especially in recent ones.

He has had five such operations during the past year ; one on the hepatic duct, one on the common duct, and three on the gall bladder. All have been successful.

The author describes the method by which he sutured the hepatic and common duct : The patient is hung by straps under the arms on an inclined plane at an angle of something less than 45°. A sandbag is placed under the back, so that the patient is bent over it. In this position the intestines gravitate to the lower part of the abdomen, so that when the liver is held up by a retractor the air sucks in between the liver and intestines, much as it enters the pelvis in the Trendelenburg position. When a stone is found the rest of the

ducts should be palpated with especial care, as the success of the suture depends on the unobstructed flow of the bile.

When a stone is found it is grasped with the thumb and finger of the left hand and raised to as convenient a level as possible. The finger should not be removed from the duct until the stitches are tied. The duct is incised over the stone by a longitudinal cut. The stitches are then placed in the sides of the duct before the stone is removed (*Fig.* 9), for the instant the stone is removed the duct collapses, and the wound is bathed in bile, and cannot be brought into an accessible position again.

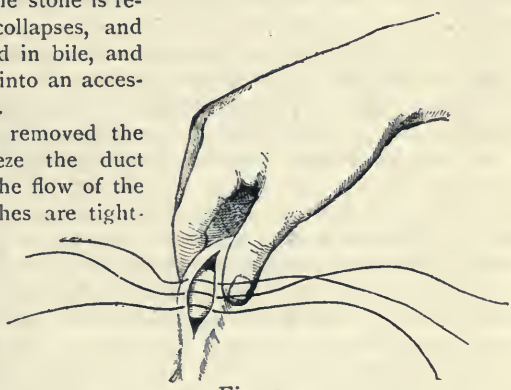


Fig. 9.

As the stone is removed the fingers may squeeze the duct above to prevent the flow of the bile before the stitches are tightened ; at this point a sound can easily be passed down the duct if desired.

Two rows of stitches are placed, catgut being used for the duct itself, and silk for the overlying peritoneum. A small drainage-tube is passed down to the duct and surrounded with gauze. The abdominal wound is closed except at the point where the gauze is to be removed.

In the course of an ordinary cholecystotomy where gall stones are found impacted in the cystic duct and not removable by back pressure with the fingers in the abdomen, Dr. Hans Kehr[5] advocates direct incision of the duct through a second abdominal wound in the midline with immediate suture of the wound.

The ordinary temporary fistula of cholecystotomy serves as a safety opening for drainage, and takes the pressure off the duct sutures.

Mr. T. Pridgin Teale read a paper at the Leeds and N. R. Med. Chir. Soc., in January, 1895, on the " Disruption of Impacted Biliary Calculi," including three cases in which a gall stone in the common duct was broken up by the needle. After speaking of various methods adopted by himself and others in dealing with calculi in the cystic duct, three cases were related in which a gall stone of firm consistence, obstructing the common duct and causing jaundice, was broken up by means of an acupuncture needle. The first case was that

of a man, aged sixty-two, who had been jaundiced for several months, and with some intermission for twelve months. At the end of six weeks, jaundice had disappeared and he was well. The second case was that of a woman, aged thirty-eight, who had been deeply jaundiced for two months, and with absence of bile from the evacuations for three months. An extremely hard calculus was broken up by the needle with great difficulty. She died on the third day. In the third case a calculus broken up by the needle did not pass down into the bowel but upwards into the gall-bladder, whence the fragments were washed out by the syringe over a period of three weeks. Jaundice persisted, and yet about three ounces of bile escaped daily through the opening in the gall-bladder. The patient recovered her health and nutrition, although the jaundice persisted.

Mr. Monier-Williams and Mr. Marmaduke Sheild[6] record a case of acute suppurative cholecystitis with perforation of the gall-bladder, and subsequent purulent peritonitis occurring as a sequela of typhoid fever in a married woman, aged thirty-one years. Abdominal section was performed, when the gall-bladder was found much inflamed, of a dark plum colour, rigid, thickened, and adherent, and not much enlarged, though slightly distended, while near the neck of the viscus was a sharply circular sloughy ulcer, the size of a three-penny piece. The gall-bladder contained about one and a half ounces of thick offensive pus, unmixed with bile, which was evacuated, and the edges of the opening stitched to the parietes. After cleansing the peritoneum as much as possible, a glass tube was inserted down to the site of perforation. The patient ultimately recovered perfectly. Unfortunately, no bacteriological examination of the gall-bladder contents was made.

In the Birmingham "Medical Review," (April, 1895), is an interesting paper by Mr. Jordan Lloyd on the localisation and treatment of gall stones, reviewing the application of the various operations on the gall-bladder and bile ducts. He advocates choledochotomy with subsequent tamponing with iodoform gauze, on impaction in the common bile duct, and says that the application of sutures to the incised duct is waste of time.

Dr. F. H. Edgeworth[7] records the case of a girl, aged four and a half years, who from the age of six months had been liable to recurring attacks of jaundice. On examination, a fluid tumour was felt beneath the liver, which was supposed to be the distended gall-bladder.

Post-mortem, the common duct was stenosed near the intestinal end, the cystic duct obliterated, the gall-bladder shrunken, and con-

taining inspissated mucus, while the back of the common duct was enormously dilated to form the tumour before mentioned.

At a meeting of the Pathological Society, London, Dr. Francis Hawkins[8] (Reading) showed a specimen, removed from a male child, aged, at death, four months and two weeks, in which the common bile duct was obliterated. This duct was obliterated, and appeared as a mere thread, about 1 inch, before joining the duodenum. The child had suffered from jaundice, which was first noticed eight days after birth.

REFERENCES.—[1] "Soc. de Chir. de Paris," and "Brit. Med. Journ.," Epitome, June 22, 1895 ; [2] "Annals of Surgery," Aug., 1895 ; [3] "Rev. de Chir.," Feb., 1895, and "Brit. Med. Journ.," March 30, 1895 ; [4] "Annals of Surgery," July, 1895 ; [5] Halbustadt, "Verhandl. du deutsch. Gesellsahaft fur Chirurgie.," xxiii Kongress, 1894 ; [6] "Lancet," March 2, 1895 ; [7] Ibid., May 11, 1895 ; [8] Ibid., April 6, 1895.

GANGLION. *Priestley Leech, M.D., F.R.C.S.*

TREATMENT.—The treatment of this condition is often very unsatisfactory. Removal even does not always lead to cure. Duplay[1] mentions a case where the ganglion had been twice removed and recurrence took place. He describes a simple, safe and invariably successful treatment.

The skin is first washed and disinfected as for an operation ; 5 or 6 drops of tincture of iodine are then injected into the cyst at its most prominent part, the skin having been first drawn aside so that a valvular opening is made. The cyst is not evacuated, but a small antiseptic dressing is applied and pressure exercised by means of wool and a bandage. The pain is slight and ceases in two or three days. A cure as a rule is accomplished in five or six days. In large cysts a second injection is sometimes necessary. Care must be taken that the syringe is aseptic.

REFERENCES.—[1] "Arch. Gén. de Méd.," Dec., 1894 ; "Lyon Médical," No. 9, 1895.

GLANDS (Enlargement of). *Priestley Leech, M.D., F.R.C.S.*

Subcutaneous Extirpation of Tubercular Cervical Glands.—The following operation proposed by Dollinger[1] may be of use where there are no previous scars, and where the glands are not softened. The posterior part of the scalp is shaved and the scalp and the skin of the affected side of the neck carefully disinfected ; the incision is made within the hairy portion of the scalp, so that the scar is hidden when the hair grows again. The incision is made behind the ear about the height of the external auditory meatus and a centimètre within the

hair covered portion of the scalp; it is carried in a curved line downwards and backwards towards the middle line of the neck behind, the convexity of the curve being downwards. The skin and superficial fascia are divided, and the anterior and lower flap is undermined with the finger and elevator until the enlarged glands are reached and removed. The author says that the skin of the lower flap is so yielding that it is possible, especially in women and children, to reach glands under the chin and even those in the supra-clavicular region.

REFERENCE.—[1] "Centralblatt. für Chirurgie," No. 36, 1894.

GLAUCOMA. (See "Eye, Diseases of.")

GLEET.

Synopsis.—(Vol. 1895, p. 300.) In order to determine the site of inflammation Fenwick uses staining injections, after using which the patient brings for examination the first part of the morning urine, and if it contains coloured threads only the penile urethra is faulty, as in only about 6% of patients can ordinary injections pass the opening of the membranous urethra, but if white threads appear the posterior urethra is the part affected. Generally both are seen, indicating that the posterior as well as the anterior parts are involved. The injections used are either Tinc. Catechu, ♏viij—℥j; liquid extract of Red Gum, ♏4–10—℥j; or watery solution of Methyl Violet, 1 in 3000.

GOITRE. *Græme M. Hammond, M.D., New York.*

Kochu, in the past ten years' experience in nine hundred cases, in his "Report on Extirpation of Goitre," claims that he had met but one case in which cachexia strumipriva had developed. This was due to the fact that he always left a part of the thyroid gland intact, sufficient to carry on its functions to a moderate degree. In the case he mentioned in which cachexia was present he had extirpated only one-half the gland, but later, after the operation, it was found that the remaining half of the gland was atrophied. It was restored, however, under thyroid feeding.

In reference to the mortality, he deducts from the total number of cases thirty cases of malignant disease or such as were associated with difficulties that militated against success. Of the remaining eight hundred and seventy cases, eleven died; in six only was death due directly to the operation, and of these three were of Graves' disease. He considers thyroidectomy for the relief of Graves' disease very dangerous, greatly preferring tying not more than three of the thyroid arteries.

REFERENCE.—Congress of German Surgeons, "Med. Weėk," April 20, 1895.

GONORRHŒA.

P. G. Unna, M.D., Hamburg.
Norman Walker, M.D., Edinburgh.

Valentine[1] investigated the effect of sandal-wood oil on gonococci. He found that they grew typically, in three cases out of nine, on urine agar, which contained the oil, or rather the santalate of soda. Other organisms grew luxuriantly, and he thinks the undoubted action of the drug may be due to the altered reaction of the urine.

REFERENCE.—[1] "Archiv. fur. Dermat.," 32, 1-2.

Priestley Leech, M.D., F.R.C.S.

The following is given as a new cure by the Paris correspondent of the "Medical Press." It is an abstract of a lecture by Dr. Routier[1] of the Hôpital, Chochin-Routier. In acute stage do nothing but tell the patient to wear a suspensory bandage, take an alkaline bath every three days, and come back in ten days when you will cure him. If the case is of some weeks' standing the treatment can be commenced at once. If abscess, fistula or other complication, break these first before attempting to cure the gonorrhœa. A reservoir holding two quarts is filled with solution of **Permanganate of Potash** (1 in 2000) warm if possible; an indiarubber tube two yards in length with a glass nozzle at the end is fixed to the reservoir. The patient first urinates, the reservoir is placed about five feet above the penis, the glans and meatus are irrigated, and then the nozzle is introduced into the meatus when the liquid flows in until it reaches the sphincter, when it returns and escapes washing out the anterior portion of the urethra. If one wishes to attain the posterior portion of the urethra the meatus is pressed against the cannula, and the liquid being unable to escape forces the sphincter and enters the bladder. As soon as the patient feels the want to urinate the current is turned off and the man recommended to press on the penis from time to time while ejecting the solution so as to stop the flow, by which means the liquid penetrates into all the glands and its action is increased. This may be repeated once or twice. If five feet is not high enough for the liquid to penetrate the bladder the reservoir may be raised. One *séance* a day is sufficient, and if the patient comes every day he is cured at end of eight days. To ascertain if the patient is really cured of his gonorrhœa put a few drops of solution of nitrate of silver (1 in 1000) into the urethra, a chemical inflammation is provoked, and if any gonococci have remained a drop of pus will be found in the morning.

Dr. E. Monod[2] recommends the use of injection of permanganate, but it was first suggested by Janet at the Congrés Francaise de Chirurgie, 1892.

Hutchinson[3] says that his treatment for gonorrhœa has for a long time been the same almost without regard to the stage or severity of the disease. He nearly always uses abortive measures, never sees any ill consequences, and complications are rare. He says he should as soon think of delaying the use of local measures in gonorrhœa as he would in purulent ophthalmia.

His treatment is as follows : (1,) An injection of solution of **Chloride of Zinc** 2 grns. to the ounce used three or four times a day ; (2,) 10 to 20 minim capsules of **Sandalwood Oil**, 1 three times a day ; (3,) A purgative night dose consisting of 3 drachms of **Epsom Salts** and ½ a drachm of **Bromide of Potassium**. Moderate purgation and entire abstinence from stimulants are necessary. If patient is well purged he says there is no risk whatever in an abortive treatment from the day that he comes under treatment.

REFERENCES.—[1] "Med. Record," June 1, 1895 ; [2] "Gazette de Gynecologie," Nov. 1, 1893 ; [3] "Archives of Surgery," vol iii., p. 236, also vol. iv., p. 165.

HÆMOPTYSIS. *R. Shingleton Smith, M.D., B.Sc., F.R.C.P.*

Morain,[1] taking as his type tuberculous hæmoptysis, considers that all should receive the same treatment. This treatment he gives as follows : The removal of all clothing that can compress the throat or chest ; the patient should be so seated that the trunk is nearly vertical. Silence and repose on his part should be insisted on, while the windows ought to be opened. While waiting to do better, the patient should suck **Ice**, though marked results cannot be hoped for.

Ergotine, or better, **Ergotinine**, hypodermically injected, is the treatment ; for example, 15 minims of the following solution :—

℞ Ergotine gr. xxx | Glycerin (neutral), Water, āā, ʒiv

If ergotine cannot be obtained, **Ergot** should be given, as the fluid extract, in doses of ½ to 1½ drachms. The perchloride of iron should be avoided. **Opium** should be given in pills or, preferably, as hypodermic injections of **Morphine** (⅙ to ¼), repeated frequently enough to produce somnolence. At the same time a revulsion as energetic as possible should be produced ; for this purpose **Sinapisms** should be applied to the lower extremities and **Dry Cups** to the thorax. Where the hæmorrhage is abundant the limbs may be bandaged, and, if the patient is menaced by syncope, hypodermics of ether, and injections of saline solutions, which should be retained, are of value. If these measures are not successful, one may have recourse to **Ipecac**. which may be administered in either of the two following methods ; a dose to produce vomiting (½ to 1 drachm) within a half-

hour ; or to produce nausea, by giving five to six doses at ten-minute intervals, of 1½ grains of pulverized ipecac.

In addition, the application of ice to the chest often produces good effects. As food, iced milk is allowable, champagne frappé, cold bouillon, and lemonade.

REFERENCES.—[1]"Rev. Int. de Med. et de Chir. Prat.," December, 1894 ; "Therap. Gaz.," June 15, 1895.

HÆMORRHAGE. *Priestley Leech, M.D., F.R.C.S.*

In England transfusion of **Saline Fluid** in cases where life is threatened from severe hæmorrhage is the rule, but abroad and more particularly in France the subcutaneous injection of **Artificial Serum** is more frequently used.

Lemoine[1] reports the case of a young woman who lost a large amount of blood during pregnancy in whom he injected subcutaneously 1½ pints of artificial serum, and three hours later the symptoms as well as the fluid had totally disappeared. The injection was made into the buttocks, and the liquid employed has the following composition :—

℞ Sodium Phosphate		Water	Oij
Sodium Chloride, āā	ʒij		

Jennings[2] has proved experimentally that animals may be resuscitated by intravenous injection even after both respiration and pulsation have ceased for some minutes, as a result of hæmorrhage from the larger vessels. Animation with complete recovery followed the injections. The explanation of this phenomenon is that upon nutritive grounds exceedingly little blood is necessary to maintain life, but upon dynamic grounds a certain quantity of fluid which holds a definite ratio to the body weight must be within the vascular system in order that the heart may have something to contract upon and that the mechanism of the circulation may be maintained. For apparatus, he uses a siphon of indiarubber like a nasal douche with a graduated quart measure. A teaspoonful of salt or even simple water may be used, but the following is the formula of a powder which added to a pint of water yields a solution of the normal salinity of the blood :—

℞ Chloride of Sodium	50 grs.	Phosphate of Sodium ($Na_3 PO_4$)	2 grs.
Chloride of Potassium	3 grs.	Carbonate of Sodium	2·5 grs.
Sulphate of Sodium	2·5 grs.		

The temperature of the fluid to be injected appears to vary with different operators. Jennings says it should be less than 100° F. Personally I have used it as hot as the hand could bear, and it seemed to be more efficacious than when used at blood heat.

Dr. Dawbarn[3] by experiments on dogs has shown that the animals

bore the loss of blood much better and more quickly recovered strength of heart beats, if the temperature of the salt solution thrown into the blood-vessels were as hot as could be borne by the hand rather than that ordinarily recommended.

McBurney[4] in a case of amputation at the hip-joint for sarcoma of the femur, in addition to compressing the common iliac artery through an incision in the abdominal wall, also injected 1500 cubic centimètres (about 48 ounces) of saline fluid during the performance of the operation.

Mayo Robson[5] treats shock after prolonged operation with saline transfusion. He gives several cases of shock successfuly treated by this method. There had been no hæmorrhage in these cases. He explains its action by saying that in shock without serious hæmorrhage the blood is driven into the large abdominal veins, leaving the head and extremities in a state of anæmia. He uses ordinary salt, a drachm to the pint, and uses 3 to 4 pints. As apparatus he uses an ordinary Higginson's syringe with a glass cannula. He does not state at what temperature he uses the solution.

McBurney[6] reports a case of nephrectomy for renal calculus in which during twenty-four hours after operation nausea began, followed by vomiting, headache, and symptoms of uræmic poisoning. The pulse was not above 100, there was no pallor, no indication of hæmorrhage from any point, and there was suppression of urine. No urine was passed voluntarily, and only four drachms were obtained by catheter during the twenty-four hours following the operation. He injected a quart of saline solution into a vein in the arm. The pulse became fuller, the colour better, and the patient was able to respond intelligently to questions. Thirty-four ounces of urine were passed in the next twenty-four hours, and next day seventy ounces were passed. The patient recovered perfectly.

Dr. Lilienthal at the same meeting reported a case of strangulated hernia with resection of two or three feet of gut; the woman was in good condition at the end of the operation, but suppression of urine supervened. Only a few drops were obtained by catheter. Saline infusion was done, the patient came out of her comatose state and there was striking improvement. He still feared, however, the patient would die.

Attention may be drawn to the fact that Dickinson[7] some five or six years ago proved that patients could be aroused from diabetic coma by injection of salt solution, and were in a fit state to transact business.

In any case plain unsterilised water may be used, if any other is

unobtainable, and a drachm of absolute alcohol or a few drops of liq. ammoniæ may be added to the solution as a stimulant.

REFERENCES.—[1] "Therap. Gaz.," Dec 15, 1894; [2] "Australian Med. Gaz.," Sept. 15, 1894, quoted in "Therap. Gaz.," Jan. 15, 1895; [3] and [4] "Annals of Surgery," Aug., 1894; [5] Clinical Soc. Trans., 1893, abstract in "Med. Week," Mar. 31, 1893, and in "Lancet," vol. i., 1893, p. 727; [6] "Annals of Surgery," Aug., 1895, Trans. of New York Surgical Soc.; [7] "Brit. Med. Journ.," 5 or 6 years ago.

HÆMORRHAGE OF BRAIN. (See "Brain and Skull, Injuries of," also "Cerebral Hæmorrhage.")

HÆMORRHOIDS. *Herbert William Allingham, F.R.C.S., Eng.*

Inasmuch as the various forms of hæmorrhoids are among the most common of rectal ailments, they continue to receive a large amount of attention. Each practitioner makes his own classification, prescribes his own lotions, ointments, injections, and so forth, and, if he be a surgeon, invents a slight modification of an old or new operation, and styles it his own. With such a multitude of counsellors one is likely to become bewildered rather than instructed, and, as a matter of fact, out of the "new" remedies and the "novel" operations, recently expounded in the medical publications of the United Kingdom, the Continent, and America, there are few that really deserve notice. Many are unpractical, and have not obtained that justification by experience that has fallen to the older methods, and in others the valuable portion is not novel.

As we have stated in previous issues of the "Medical Annual," the best operations for hæmorrhoids are the ligature with incision, and in selected cases, simple excision, dilatation, the clamp, crushing, and the **Carbolic Acid** injection, used in this country mainly by Mr. Swinford Edwards.

The articles published by MM. Paul Redus[1] and Ricard[2] show that forcible dilatation is still in favour among French surgeons. Beeh[3] has tried in a few cases the injection of an ethereal solution of **Iodoform.** Dr. Bishop[4] has described a "bloodless" operation, which consists of the use of the clamp, rubber tubing, and excision by flat scissors, the elasticity of this welted suture being said to prevent all hæmorrhage and to allow of healing by first intention. Dr. Gent[5] has invented a new clamp, the blades of which remain parallel and exert equal pressure, whatever the thickness of the pedicle of the tumour.

REFERENCES.—[1] "Therap. Gaz.," April, 1893; [2] "Gaz. des Hôpitaux," Feb., 1895; [3] "New York Med. Journ.," July 21, 1894; [4] "Mathew's Med. Quarterly," July, 1894; [5] Ibid., Jan., 1895.

HEADACHE.

Synopsis.—(Vol. 1895, p. 302.) For morning headache Brunton advises Potassæ Bromide, 35 gr., with Salicylate of Soda, 5 or 15 grs., to be taken the night before or early in the morning. Gradle believes that permanent benefit follows the use of Cannabis Indica in migraine; he gives 2 or 3 doses at six hours' interval, and continues it in moderate doses twice daily. He also uses Antipyrin if pain is not immediately relieved; and thinks Chloral an effective remedy if sleep can be obtained; optical defects must be rectified. Ergot has proved useful in migraine. Nasal disease must be remembered as possible cause.

HEART (Diseases of). *Frank W. Jackson, M.D., New York.*

Harris[1] has given us a valuable contribution in a careful study of *Indurative Mediastino-Pericarditis.* He has studied three cases himself, and he has collected all the published cases of this rare lesion when autopsies were obtained. He thinks that, although not commonly seen, this affection cannot be as rare as is commonly supposed. Well marked examples present a very interesting clinical history, and one which is sufficiently distinctive to permit the recognition of the disease before the autopsy.

Pathologically, but probably not clinically, we may recognize three classes of cases of chronic inflammatory conditions in relation to the pericardium and the mediastinum :—

Class I comprises cases where there is an adherent pericardium, with marked increase of fibrous tissues in the mediastinum, not infrequently associated with a caseous affection of the lymphatic glands of the mediastinum, and where there is adhesion of the exterior of the pericardium to surrounding parts—true *indurative* mediastino-pericarditis.

Class II comprises cases of an adherent pericardium with thickening of the sac, and adhesions of its exterior to surrounding parts, but with very little, sometimes no general mediastinitis. This has been termed *pericarditis externa* and *interna;* it is more common than Class I.

Class III comprises those rare cases where there is an increase of fibrous tissue in the mediastinum without any internal pericardial adhesions. Here the term *chronic mediastinitis* is appropriate.

We may perhaps during life separate the cases belonging to the third class from those belonging to the other two, but the difficulty of separating cases belonging to Class I from those belonging to Class II is very great.

As the result of a study of his collected cases, Harris finds the following general features in the clinical history of indurative mediastino-pericarditis.

Age.—Contrary to the common impression, the affection does not

occur most frequently in children. Of twenty-two cases, nine occurred in persons under eighteen years of age, and thirteen in persons over that age. Only two cases occurred in persons over thirty years of age. The three cases belonging to Class III, or *chronic mediastinitis*, all occurred in older persons, the youngest being thirty-seven years of age.

Sex.—Males are more frequently affected than females. Of twenty-two cases, seventeen occurred in males, and five in females.

Mode of onset and causation.—In some of the cases there is a history of acute illness, usually some acute chest affection, occurring some time previous to the manifestation of the symptoms of mediastino-pericarditis. In some instances this illness was clearly an attack of acute pericarditis. It is probable that the acute illness represented the time when the disease commenced, and that the manifestation of symptoms indicative of indurative mediastino-pericarditis at a later date represented the commencement of the cardiac dilatation and failure which was brought about by pericardial adhesions. In some cases the only previous acute illness was one of the acute fevers, most commonly scarlet fever or measles. In many cases the onset has been insidious, and careful enquiry has failed to elicit any symptoms of acute chest affection. Trauma does not appear to have commonly played a part in the causation of this affection, although the contrary has been stated.

Tubercle appears to be a not infrequent associate of the disease, but in many of the cases no mention is made of tuberculosis of the mediastinal lymph glands, or of other parts, being found on autopsy. Two of the three cases observed by Harris showed tuberculosis.

Symptoms and physical signs.—These are chiefly dyspnœa, more or less evidence of venous engorgement and cyanosis, cardiac enlargement, increase in the size of the liver, and either general dropsy, or only ascites, a pulsus paradoxus, and inspiratory swelling of the veins of the neck. All these symptoms and signs are not, however, necessarily present in every case.

The physical examination commonly shows evidence of cardiac enlargement, and dilatation preponderates over hypertrophy. This cardiac enlargement is due to the increased work thrown upon the heart by the adherent pericardium, and the degeneration of the cardiac muscles which supervenes. In these cases we commonly get a marked increase of the mediastinal dulness, but this is usually due to increased size of the heart, especially the right heart, rather than to increase of the mediastinal tissue. When the heart is very markedly dilated, and especially when it is pushed up by fluid in the abdominal

cavity, the mediastinal dulness may be very extensive, reaching up even to the lower border of the first rib. In some cases, however, enlarged caseous glands, together with increase of the fibrous tissue of the mediastinum may, apart from the enlarged heart, produce dulness over the upper part of the sternum.

The heart sounds may be natural, weak, or, if there is independent valvular disease, there may be murmurs.

The pulse presents different characteristics in different cases. It may be practically normal, but more commonly it has been found small, frequent and irregular. The form of irregularity in which the pulse becomes smaller during the act of inspiration, or the "pulsus paradoxus," was formerly regarded as pathognomonic of mediastino-pericarditis. Harris shows that this pulsus paradoxus is not diagnostic. It is occasionally seen where we have no mediastinal affection, and mediastinal-pericarditis may exist without causing this form of pulse. He further states that this pulsus paradoxus has been observed in different forms of pericarditis without mediastinitis, in cases of large pleuritic effusions, in great cardiac weakness, in convalescence from long standing febrile affections, in great dyspnœa from narrowing of the air passages, in cases of mediastinal tumour, and in mitral incompetence with dilatation of the heart. Experimentally it has been produced in animals by compression of the inferior vena cava at its entrance into the auricle during the inspiratory period, and slight diminution of the pulse has even been observed in sphygmographic tracings taken from healthy individuals. (To this very complete *résumé* of the causes of the pulsus paradoxus by Harris, I would add the report of a case of my own which has been under my observation for six years. The subject is a young man in perfect physical condition—he is the foreman of one of the New York Fire Companies. He has rather unusually great chest expansion, and according to the depth of his inspirations, he can weaken the pulse at the wrist, or obliterate the pulse altogether. Schreiber[2] has noted the same phenomenon.)

Engorgement of the veins of the neck is common in cases of mediastino-pericarditis, and such engorged veins may show marked pulsation, just as in cases of dilatation of the right cavities of the heart from simple dilatation or secondary to valvular disease of the heart. A peculiar form of distension of the right external jugular vein has been considered of great diagnostic value. In this form of pulsation the vein is seen to fill and become distended during the act of inspiration, especially when a deep inspiration is taken. Unfortunately, for its diagnostic valve, this inspiratory swelling of the right cervical vein is sometimes absent in cases of this disease. It has also been

observed in an uncomplicated case of pericarditis exudativa. It cannot, therefore, be regarded as a constant sign.

The *duration* of indurative mediastino-pericarditis varies considerably—from a few months to a number of years.

The *cause of death* varies, but in the majority of cases it is due to gradual cardiac dilatation and heart failure. Bronchitis and catarrhal pneumonia frequently assist in bringing about a fatal termination. Attacks of pleurisy appear to be very common in the course of the affection, and must assist in reducing the powers of resistance of the sufferer. In other cases we may have the development of acute tuberculosis or the extension of a pre-existing phthisis as the principal cause of death.

TREATMENT.—No special treatment can be of much avail. The management of such cases is simply that of cardiac dilatation.

Leyden[3] has given further attention to the subject of *ulcerative endocarditis* with regard to its bacteriological relations. In a case following pneumonia, he found the characteristic diplococci on the endocardium. These were cultivated and their virulence proved by the inoculation of rabbits. He has studied six cases of articular rheumatism with fatal heart complications. The first case was a man twenty years of age, with a history of rheumatic fever, and following valvular lesion. Three weeks before entering hospital he was taken with rheumatic sore throat and pains in the knee and ankle. Dyspnœa followed with a systolic, and a diastolic murmur. Autopsy showed vegetations on the endocardium containing small round cocci arranged like diplococci. This seemed the more striking because the endocarditis was not of a malignant character. The second case was a girl eighteen years old with rheumatic pains, but without a cardiac murmur. The autopsy showed vegetation on the endocardium with a collection of the same round diplococci. In the third case a man of twenty, had ulcerative aortic-mitral endocarditis, and the same diplococci were found. The fourth and fifth cases showed no living bacteria. In the sixth case, the same diplococci were found, and were cultivated in the fluid drawn from an ascitic patient. Leyden is inclined to believe that this diplococcus is closely related to articular rheumatism, since it is different from the staphylococcus in form, being almost exclusively that of a diplococcus, and not as coarse as the staphylococcus; besides, in contradistinction to the staphylococcus, cultures on the ordinary media were unsuccessful, while those on media made from human serum were successful, and these developments differed distinctly from that of the staphylococcus. Guenther supports the author in the belief that this is a coccus hitherto unknown.

Herschell[4] regards cycling as more injurious than other forms of exercise, because often the cyclist "overdoes" it—he unconsciously overtaxes his powers. He is often led to ride too fast; and in climbing high hills there is a great strain on the heart. Herschell thinks that excessive cycling may affect the heart in four ways: (1,) By simple hypertrophy; (2,) By acute dilatation; (3,) By chronic valvular disease; (4,) By functional derangement.

The preventive measures against the dangers of cycling are: The use of a low gear; the upright position in riding (the stooping position prevents proper expansion of the lungs, and interferes with the proper aëration of the blood); adequate food when riding, and the avoidance of muscle poisons, such as beef tea; the avoidance of kola and coca preparations—thereby benumbing the sense of fatigue, cause more work to be done than is judicious. On no account should the bicyclist continue riding after he has commenced to feel short of breath, or when there is the slightest sensation of uneasiness in the chest.

I have recently called attention[5] to some of the more common difficulties which may embarrass the general practitioner in the diagnosis of cardiac diseases, and a brief abstract of this paper may not be out of place here.

In the first place, it is not generally recognized that a cardiac murmur may be evanescent. The common belief is that a murmur once developed must be present continuously as long as the morbid condition, which gave rise to it, persists. This is not the case. A murmur may, and frequently does, appear and disappear and return again within a very few hours. Such evanescent murmurs are most commonly due to functional derangements of the heart, but they are also observed in connection with well marked valvular lesions. This is true of both feeble and loud murmurs.

Next, we have the curious fact, which is, I believe, almost altogether over-looked, that some murmurs are heard only by the unaided ear, and are inaudible to the stethoscope, while some are inaudible to the ear, and are heard with great distinctness by the stethoscope. This may be noted in any form of valvular disease, but it is most common in connection with the murmur of aortic regurgitation.

The fact that murmurs do not always confine themselves to their regular areas, is still another source of error. We naturally expect to find the murmurs of aortic valvular disease in the neighbourhood of the second intercostal space to the right of the sternum, or over the upper portion of the sternum itself; but this is not always the case. The murmur of aortic regurgitation, particularly, is often heard *only* over the ensiform cartilage. Occasionally the murmur is heard *only* at the apex

of the heart. A murmur heard in the neighbourhood of the second intercostal space to the left of the sternum may indicate, apart from functional derangements of the heart, disease of the pulmonary valves or of the pulmonary artery; but disease of the right heart is so rare that it is hazardous to make such a diagnosis. The true condition is usually disease of the *aortic* valves or pressure upon the pulmonary artery. In a like manner we may be deceived by the situation of the murmur of mitral stenosis. We are told that this should be heard only at the apex of the heart, but it is often inaudible at this point, and is only heard in the third intercostal space to the left of the sternum. Occasionally it is only heard in the axillary region considerably to the left of the apex beat.

The difficulty of diagnosis in cases of cardiac disease without a murmur is much greater. This applies particularly to disease of the aortic valves, or of the aorta just above the valves. The diagnosis of a dilated heart or of cardiac weakness is comparatively simple, since in these cases we have direct evidence of the failure of the cardiac muscle, and the presence or absence of a murmur signifies but little. Well marked stenosis of the mitral orifice or of the aortic orifice, though often unattended by its characteristic murmur is usually recognized without much difficulty, but there is a class of cases in which there is either atheroma or thickening of the aortic valves with atheroma of the aorta, or there is atheroma of the aorta involving the orifices of of the coronary arteries, and without involvement of the aortic valves, which are unattended by a murmur. The difficulty in the diagnosis of some of these cases is very great. Yet they should be recognized, if possible, since the prognosis is of the utmost gravity. Most of my cases have been business men, of middle age, who have been in active business for many years, and who have worried over their business. These men complain for a considerable length of time of "dyspepsia," then they have painful sensations about the heart, and finally dyspnœa on exertion. They are liable to sudden death, usually with the symptoms of angina pectoris. In some cases the diagnosis of this form of cardiac disease is comparatively easy, in others it is very difficult. The most significant physical signs of this condition are enlargement of the heart and an absence of the aortic valve sound, or a feeble aortic valve sound, but we may be unable to obtain either of these signs.

Another source of error in the diagnosis of heart affections is to be found in the estimation of the size of the heart. Many hearts have undoubtedly been regarded as diseased which were absolutely healthy simply because the apex was farther from the median line than is

commonly the case, or because percussion revealed a larger area of cardiac dulness than the average observer expects to find. The left border of the heart is, in the healthy individual, much farther to the left than is usually supposed. It is commonly regarded as being about a quarter of an inch to the *right* of the left male nipple, and it is believed that much increase of the area of dulness beyond that point indicates enlargement of the heart. As a matter of fact, the line of the left border of the heart usually runs through the areola of the male nipple, ahd often to the *left* of the areola of the nipple. Palpation of the apex beat is, however, the most reliable method of estimating moderate increase in the size of the heart, but even here the opportunities for error are numerous. The relation of the apex beat to the nipple line is not a good guide, for the nipple varies in its position in different individuals. In the healthy adult heart, the apex beat may sometimes be found to the left of the nipple line. It is better to estimate the distance of the apex beat to the left of the mid-sternal line. Such apex beats may be found in the healthy male adults, in the erect position, from two inches and a quarter to four inches and a quarter to the left of the mid-sternal line, depending upon the size of the individual, and the degree of development of the chest. In many cases the question as to whether a heart is to be regarded as enlarged or not is far from a simple problem, and its solution must be sought through a process of rational deduction, rather than by the direct evidence of physical examination.

It would seem that the secondary congestions resulting from a dilated or weak heart, would invariably be referred to their proper source ; but it is easier to overlook this than one would at first suppose. Cases of acute dilatation of the heart without endocarditis are those which are most liable to lead one into error. Here the symptoms of interference of the functions of the stomach and liver may assume such prominence as to entirely over-shadow the breathlessness and palpitation, which would otherwise direct our attention at once to the heart, and even though the heart be examined, the absence of a murmur, and the absence of a rheumatic history, may entrap the unwary.

Cardiac disease may be over-shadowed by acute disease of the lungs, or by general diseases. For example, a bronchitis may mask the murmur of valvular disease of the heart. Malignant endocarditis is particularly liable to be over-looked. Here the fever and erratic chills are liable to be referred to the lungs if there be evidence of disease of the lungs, or the disease is mistaken for malarial poisoning. The presence of a cardiac murmur and the purpuric eruption, or other

evidences of hæmorrhage, will usually direct attention to the true nature of the disease, but both the murmur and other signs may be absent.

Sahli[6] discusses an interesting subject in what he terms "Accidental Cardiac Murmurs." It is generally admitted that the presence of a systolic murmur without other clinical signs does not justify the assumption of a valvular lesion, since such murmurs have been heard in persons apparently in perfect health, but especially in cases of anæmia, fever, jaundice, etc., where the post-mortem examination positively excluded any valvular lesion. Such murmurs Sahli calls *accidental.* We are to understand by this term that no importance is to be attached to these murmurs with reference to the clinical picture, for there is no disturbance of the valvular mechanism. Sahli would distinguish these murmurs from so-called functional murmurs, which are due to a relative insufficiency of the valves, caused either by anæmia or by any other affection which damages the cardiac muscle, and leads to dilatation of the ventricles, and, therefore, to more or less disturbance of the valvular mechanism. Functional murmurs are to be treated just as the murmurs due to anatomical valvular lesions, but accidental murmurs offer no indications for therapeutic measures. The explanation of these purely accidental murmurs is still more or less hypothetical, but it seems that they occur wherever the conditions are favourable to an abnormally rapid blood-flow, and the physical nature of the blood in anæmia would seem to have a share in the production of these murmurs.

The occurrence of systolic accidental murmurs is generally accepted, but the question of the existence of such murmurs during diastole has not yet been settled. Sahli believes that such diastolic murmurs do exist, and gives the histories of two cases of pernicious anæmia in proof thereof. A woman of thirty gave all the symptoms of a very severe anæmia, and the blood contained only 15 per cent. of hæmoglobin. On July 9th, the heart was found to be enlarged to the left; the pulmonary second sound was exaggerated; there was quite a loud systolic murmur heard most distinctly in the left third interspace near the sternum; the second sound at the apex was not clear, but there was no distinct diastolic murmur. On July 19th, the hæmoglobin was below 10 per cent. The heart showed the same signs as above, and in addition there was a distinct *diastolic (*not *præsystolic)* murmur at the apex. The autopsy on July 20th showed dilatation of the left venticle, but the valves were perfectly normal. There was marked fatty degeneration of the heart muscle. The second case was exactly similar to the first.

Therapeutics of Heart Disease.—The treatment of chronic diseases of the heart by means of **Baths** and **Gymnastics,** or "the **Schott Method,**" as it is commonly termed, has attracted considerable attention of late, and it seems to be quite generally commended. Thorne[7] gives us an able *résumé* of the subject. The baths used by the Schotts are those of Nauheim—saline and effervescent warm baths—but artificial mineral baths yield the same results. The system consists of two methods of treatment—that by baths and that by remedial exercises or movements. Broadly speaking, the immediate effects on the heart and blood-vessels of immersion in water, which is relatively pure, or which holds in solution a number of mineral and gaseous constituents, depends upon the temperature of the water. The range of temperature available for the therapeutic purposes in question, is between 85° and 96° F. The effect of the immersion is to at once increase the volume and diminish the rate of the pulse. These mineral baths produce the following immediate and rapidly ensuing results: a marked diminution of the rate of the pulse; an equally notable increase in its volume and force; a glow of warmth extending to the extremities, and increasing their colour; and a lasting sense of refreshment and invigoration. During the first two to six minutes of immersion, the breathing becomes oppressed and laboured, with sometimes a sense of constriction in the epigastric region, while at the same time the area of cardiac dulness diminishes from one-third to about one-half an inch in the healthy heart, and an inch or more in the dilated heart, as measured in the oblique transverse diameter. These are not simply transitory effects; the force, volume, and rate of the pulse, and the area of cardiac dulness all show a tendency to return to the initial standard within the following twenty-four hours. Each successive day, however, with its bath of graduated strength and duration brings its instalment of gain which leads to a recovery, in some cases partial, but in many complete. Often within the first to the third day, a free diuresis is established, which may last in greater or less degree throughout the bathing course, and after it. If the liver be enlarged, it will be observed to diminish in size rapidly. The bathing course is about seven weeks.

The second method, which is in some respects even more remarkable, consists of movements or exercises. These consist of movements, which should be performed under the immediate direction of the physician so as to avoid sweating and the slightest degree of dyspnœa. The patient is subject to a certain measure of resistance offered either by the physician, or by a carefully trained assistant. These movements are successively applied to the upper extremities, trunk, and

lower extremities. As a general rule, the exercise is not continued more than half an hour at a time. The effects of these movements upon the pulse, heart, and abdominal viscera, are in most respects identical with those of the baths. The movements, however, diminish the pulse rate less rapidly, and to a less marked degree than do the baths. On the other hand, the movements yield more rapid and striking results in reducing the area of cardiac dulness. The baths may be regarded as exercising a more profound and enduring influence on the nutrition, on the cardio-vascular tissues, and on the tissues generally. Both methods are capable of bringing influences to bear on the heart and blood-vessels, the importance of which it would be difficult to exaggerate. Combined, they are capable of producing effects which throw the action of drugs completely into the shade. Judiciously directed and skilfully applied, they are capable of yielding therapeutic results, the importance of which can scarcely be overestimated.

Thorne believes that these results are obtained by reduction of peripheral resistance owing to the increase of vascular carrying capacity through dilatation of the general vascular system, and particularly of the capillaries, thus increasing the relative driving power of the heart. The class of cases in which the Schott method should be employed is, where the indications point to the reduction of peripheral resistance ; to the relief of a weakened, labouring, dilated heart, with or without valvular lesion ; and to the repair of damaged or degenerating cardiac and vascular structures. Dr. Schott, until recently, excepted only those conditions which involve advanced arterio-sclerosis and aneurism of either the heart or one or more of the great vessels, but he is now disposed to withdraw his reservation as to aneurisms of the great vessels. Thorne states that of eighty-five of his cases, one failed to derive benefit from the exercises, and had no opportunity of making trial of the baths, and two died in the course of treatment, one from capillary bronchitis followed by inflammation of an enlarged liver, and, eventually, cardiac thrombosis ; the other died from acute hepatitis.

Groedel[8], of Nauheim, also endorses this treatment. He thinks, however, that it is unadvisable to send patients to Nauheim for a course of baths on whom medicaments, and especially digitalis, produce no reaction whatever.

Babcock[9], of Chicago, in a paper read at the eleventh annual meeting of the American Climatological Association, also approves of the Schott method. Chronic interstitial nephritis is not a contraindication to this treatment.

Sansom[10] has given us an interesting study of the nervous disturbances of the heart, resulting from influenza, and their treatment.

In one hundred cases, there was pain referred to the heart in twenty-three cases; tachycardia in thirty-seven cases; irregular heart in twenty-five cases; bradycardia in five cases; organic disease of the heart in ten cases. Organic disease of the heart as a direct result of influenza is very rare, but the specific poison alarmingly reinforces pre-existing rheumatic disease. Endocarditis and pericarditis of rheumatic origin may rapidily increase if the subject of them become infected with influenza. In very rare cases a septic form of endocarditis has been initiated by the acute disease. Acute and subacute inflammation of the aorta and probably of the pulmonary artery have been induced in some cases. The effects of influenza are long-lasting. The view that the dangers and difficulties are over when convalescence is established, from even a slight attack, is a very erroneous one. Processes of disease may begin to be manifested many months after the initial attack, and these may continue more than two years. Disturbances of the nervous mechanism of the heart are frequent sequels of influenza, and their origin may be traced to morbid conditions of the medulla of the nerve elements within the cord and of the sensorium. For severe heart pain after influenza, complete rest should be recommended in the early stage of treatment. Hypodermics of **Morphine** may be given, a diffusible stimulant being administered by the mouth previous to the injection. Once the severity of the pain is mitigated, other agents than morphine should be employed. **Quinine** in 5-grain doses repeated hourly for four doses is often very effectual, but the same precaution in regard to the administration of diffusible stimulants should be taken as in the administration of morphine, for quinine may depress the heart. For more continuous treatment at the early stages of the painful phase, **Bromide of Soda** with 3 minims of **Fowler's Solution** may be given three times a day. Local treatment in the more persistent form of pain is valuable. Mustard poultices sprinkled with tinctures of opium, belladonna, and aconite, give relief in some cases. In other cases a fomentation of lint soaked in a hot solution of salicylate of sodium is effective. Or an ointment containing 20 per cent. of salicylic acid, and 10 per cent. of menthol, in a fatty basis of lanolin and lard, may be rubbed in over the painful area. In the more chronic cases small blisters, or the constant galvanic current applied twice daily may prove effective.

Abnormally rapid action of the heart may be the immediate sequel of an attack of influenza, or may be manifested some months after the initial attack. In some of these cases palpitations are severe, and

the heart's action is made still more rapid by muscular movements, or slight causes of disturbance. In a large number of cases there are some of the associated signs of Graves's disease. In very many, however, the abnormally rapid contractions of the heart, habitually over 100 per minute, are quite unperceived by the patient. In the treatment of these cases digitalis and analogous cardiac tonics are not only useless, but dangerous. The first indication in treatment is to allay all inordinate nervous perturbation ; complete rest in bed is not required, save in exceptional cases, but all causes of undue excitement must be avoided. The mixture of sodium bromide with small doses of arsenic is perhaps the most generally useful. Opium should be avoided, or reserved for emergencies.

The abnormal frequency of the cardiac contractions may be continued in a given subject for years. We find that such a patient is unstable, though there may be no other notable deviation from health. Treatment by drugs often fails to reduce the rate of pulsations. The continuous **Galvanic Current** is a valuable method of treatment in these cases. Weak currents are used. The anode is held over the nape of the neck, and the kathode is gently pressed into the groove in the neck outside the larynx. The current is passed for six minutes, three times, the applications of the kathode being to the right and the left sides of the neck alternately. The rate of the heart's pulsations is reduced very slowly ; there is seldom much improvement in less than six months, but the ultimate result is very satisfactory.

The irregular heart after influenza has associations very similar to those of the rapid heart. The irregularity may be extreme, and yet be unperceived by the patient. It is most important that attention be not drawn to it, for, once observed as a subjective sensation, the formerly almost harmless phenomenon becomes a lasting misery. As in the case of the rapid heart, there are signs of Graves's disease associated with the irregular heart. The most important differences are that the condition of cardiac irregularity is much more frequently attended with præcordial pain and cardiac discomfort; that it is more apt to be evidenced in persons of advanced age and gouty tendencies; and that it not infrequently co-exists with disturbances of the faculty of hearing. The lines of treatment are chiefly those recommended for pain in the head, and for tachycardia. The treatment for gout and for dyspepsia in general is of great importance, and the judicious management of the naso-pharyngeal passages (whereby reflex causes of irritation are removed), as well as all forms of auditory disturbance, is to be carried out.

Bradycardia may follow an attack of influenza, either immediately

or after the lapse of several months. The slowing of the heart may be paroxysmal or persistent. In one case a pulse, habitually at 72 per minute, was reduced to 48 per minute during periods of severe epigastric and abdominal pain, recurring every afternoon for three or four hours for the space of a week. After the pain had disappeared, the pulse rose to a rate of about 90. Treatment by **Phenacetin** and **Camphor**, with local warmth and counter-irritation of the epigastrium and abdomen, is successful in these cases. A more permanent bradycardia is much more serious. Sansom has known a pulse of 19 per minute to follow an attack of influenza. During long observation of this patient in hospital, the pulse rate never rose above 36. The man was discharged from the hospital in fair health, but died suddenly at his home soon after. The only drug which causes any increase in the heart rate in these cases is **Belladonna.** The tincture may be given in 10 minim doses three times a day, or the extract in ½-grain doses. The administration should be suspended for one or two days at the end of each week. Massage and graduated exercises are useful; but it must be realized that the condition of very slow heart is one of peril.

REFERENCES.—[1]"Med. Chron.," Nov., Dec., 1894, and Jan., 1895; [2]"Archiv. für Experimentelle Pathologie und Pharmacologie," Leipzig, 1880, Bd. xii., 2 Thril. B., S 184; [3]"Deutsch. Med. Woch.," 1894, p. 913; [4]"Lancet," 1895, vol. i, p. 540; [5]"New York Med. Journ.," April 28, 1894; [6]"Corresp. blatt. f. Schweiz. Aertze," 1895, xxv., p. 33; [7]"Brit. Med. Journ.," March 9, 1895, p. 524; [8]"Lancet," March 30, 1895; [9]"New York Med. Journ.," Dec. 8, 1894; [10]"Practitioner," April, 1895.

Synopsis.—(Vol. 1895, pp. 21 and 311.) **Digitoxin** benefits cyanosis and dyspnœa, and restores tone of pulse, causing marked diuresis in twenty-four hours; 3 to 4½ milligramme doses have caused vomiting. For the asthenic nervous heart rest in bed at first, and when the patient is able to sit up graduated **Shower Baths** are useful, also **Massage** later on, and **Swedish Movements** and **Gentle Walking, Horse Exercise** or **Light Gymnastics. Strychnine** is the best drug—$\frac{1}{30}$ gr. three times a day continuously given. **Iron** is only for anæmic conditions, or as general tonic, and if constipation follows its use it is of doubtful value. **Arsenic** comes next to strychnine in value. **Digitalis** is best for muscle weakness, and patient should be in bed if large doses are used; many patients cannot take it. **Strophanthus** is said to be inferior to digitalis. **Adonidin** and **Barium Chloride** are at times useful. Cactus and convallaria are disappointing (Da Costa). **Caffeine** and **Cocaine** are useful, but must not be kept up long; the latter often helps a failing heart. **Nitro-glycerine** may relieve pain. **Bromides, Valerian** and **Opium** are only given for special nervous manifestations. Glinski finds **Apocynum Cannabinum** similar to digitalis, but not cumulative; in dilatation it diminished the area of dulness; it is diuretic. The decoction (℥j to ℥viij), 3 to 4 tablespoonfuls a day, or tincture (1 in 10), 5 to 10 ♏ three to four times daily, or fluid extract 10 ♏ to ℥ss

three times a day are used. In mitral stenosis Barr uses: ℞ Liq. Atrop. Sulph. ♏6; Liq. Trinitrini, ♏6; Aq., ad ʒjss; M. Ft. mist. *Sig.*—ʒj three or four times a day. For chronic cases, except in aneurism of heart or vessels or advanced general arteriosclerosis, Schott's method of Warm Baths is useful, and applies to a greater variety of cases than Oertel's.

HERNIA. *A. W. Mayo Robson, F.R.C.S.*

Enormous Herniæ Treated by Operation—The accompanying illustration (*Fig.* 10) shows the largest herniæ that I[1] have been called on to treat radically. The size may be fully appreciated when I say that the man stood six feet, and that the tumour reached to his knees. As he was sixty-two and was subject to emphysema and a winter cough, the case could not be lightly undertaken, and the risks were fully placed before the man, who said that he would rather die than exist in his present condition.

Fig. 10.—Case of Large Double Hernia before Operation.

It is only under exceptional circumstances that operation on such large herniæ can be advised at an advanced age; but the invalidism entailed by the deformity, and the difficulty in micturition involved by the buried penis, rendered existence, especially in a workhouse, anything but desirable. Hence the risks of operative interference were gladly embraced.

The result proved that the treatment was not too heroic, as although the patient was so unfortunate as to develop bronchitis, the operations undertaken some time previously could not be blamed for the chest trouble.

I think that in the immediate future such large herniæ will very rarely be seen, since ruptures that cannot be restrained by a truss will be operated on at an earlier period, as it is well-known that the operation for a moderate-sized hernia is almost devoid of risk, whether undertaken in the case of children or adults.

I am not wedded to any one method, but am guided by the con-

dition as to what operation is done. I usually prefer to lay open the inguinal canal, to ligature the neck of the sac, and to excise the sac half an inch below the ligature. In order to carry the pedicle inside the abdominal muscles, I leave the ends of the encircling ligature long, and then, threading them on curved needles, carry them behind the transversalis fascia, making them pierce the whole thickness of the abdominal wall. There is thus left no pouch opposite the internal abdominal ring.

The layers of the abdominal wall are then sewn up separately, and the cord is treated either as in Bassini's or as in Halsted's operation.

If there is a redundancy of the spermatic veins, they are excised. Drainage is only employed where a large cavity is left, and then a full-sized firm rubber tube is used.

No truss is advised or required afterwards, but the patient is told to rest for about a month. The ultimate result is very satisfactory, and relapse is the exception.

Inguinal Hernia.—It would almost seem impossible to devise any new method for the radical cure of inguinal hernia, yet during the past year two modifications have been suggested—one by Dr. Phelps, and one by Dr. Charles Reed.

The points upon which Dr. Phelps[a] lays stress are the fortifying of the internal ring, the obliteration of the inguinal canal, and the formation of an artificial canal for the cord external to the muscles. These features are not entirely new in themselves, although they are attained in a somewhat different manner from the methods previously described. Briefly, the operation is as follows: A long incision is made, extending at least two inches beyond the internal ring down to the transversalis fascia, the sac is opened, and the intestine replaced. A suture is passed round the neck of the sac, like the puckering-string of a pouch, and two-thirds or more of the sac cut away. The stump is then inverted with forceps into the abdominal cavity, and the string tied tight; one or two stitches are then taken across the neck of the sac. The muscles are next dissected up from the transversalis fascia a distance of an inch and a half either way from the internal ring. In order to sew up the latter the edges of the fascia forming the ring should be denuded, and then for half an inch to an inch on either side of the ring two parallel longitudinal incisions are made (or if the fascia is thick and adherent to the sac, it can be included with the ligature and inverted with the sac into the abdominal cavity). The fascia is then stitched with interrupted fine wire sutures over the stump. Over this

fascia are placed loops of silver wire, knotted in several places to prevent slipping if the hole is a large one. Four or five of these loops, two or three inches long, will suffice. The cord is raised from the canal and the loops passed underneath from the internal to the external abdominal ring. Over these loops the transversalis muscle is carefully stitched with interrupted sutures, the cord being brought through the muscle direct; the first layer of wire or catgut should run transverse to the inguinal canal. Over the transversalis muscle another layer of wire loops is passed, extending at right angles to the deeper layer. Each wire loop is stitched to the muscle to prevent it from slipping. Over this layer of wire the internal oblique muscle is stitched with interrupted sutures, the cord being brought out through this muscle. The external oblique is then stitched. The wound is closed if there is but little adipose tissue, and left open if there is a thick layer. A small drainage-tube or a few strands of catgut are used for drainage. A large number of cuts accompany the article, which serve to render the procedures more easily understood.

Dr. Charles Reed,[3] in a recent address contends that the cause of recurrence after the radical cure of hernia is due to performing the operation through the canal itself, leaving an infundibular peritoneum and a serous track, which, particularly in congenital cases of scrotal hernia, is left in primitive continuity, being only temporarily obstructed by inflammatory exudate. An operation devised by Dr. Reed, which has proved primarily successful in his hands, and which meets the objections mentioned, is thus described by the author: In inguinal hernia an incision is made from a point two inches above Poupart's ligament midway between the anterior superior spinous process of the ilium and the spine of the pubis, obliquely downward and inward, as nearly as possible coincident with the axis of the inguinal canal to a point at the base of the scrotum. The dissection is then carried into both cavities. The protruding viscera are reduced and carefully inspected after being brought out above, and the sac is dissected from its scrotal connections and reversed by invagination. It is then opened by two incisions—one towards the pubis, the other towards the ilium—being thus converted into an anterior and a posterior flap. The cord is next dissected loose and caused to enter the canal, now denuded of its peritoneum at its outer angle. The internal ring is closed by several interrupted sutures—animal or pure silk—applied beneath the peritoneal flaps formed by splitting the sac, care being taken that in the closure of the ring undue pressure shall not be brought to

bear upon the cord. The posterior peritoneal flap is excised, the stump being ligated if thought desirable.

The anterior peritoneal flap is carried across the now obliterated internal ring and stitched by interrupted sutures to the posterior parietal peritoneum. The external ring is now closed by passing a number of sutures through its pillars external to the corner, which is now fixed in the internal (pubic) angle of the outlet of the canal. The incision in the abdominal wall is closed by interrupted figure-of-eight sutures, the internal loop embracing the peritoneum, the aponeurosis of the transversalis, and of both oblique muscles, and the external loop embracing the skin and subcutaneous tissues. The sutures should not be more than three-sixteenths of an inch apart. Drainage is not to be employed, except in the presence of marked oozing or obvious infection.

Strangulated Hernia.—The same operator[4] draws attention to the value of the application of hot fomentations to the dark and gangrenous bowel in cases of strangulated hernia.

Cases are recorded where the application of hot water has been followed by most complete restoration of circulation in very doubtful intestine, the loop being subsequently returned to the abdomen with satisfactory results.

Obturator Hernia.—Mr. W. H. Bennett[5] publishes a case of strangulated obturator hernia in a woman aged seventy-eight years, which was successfully treated by laparotomy and subsequent reduction of the strangulated gut.

There had been symptoms of strangulation for four days, but all the specific signs of obturator hernia mentioned in text-books were entirely wanting in this instance.

Small Omental Ventral Hernia Producing Severe Abdominal Symptoms.—Mr. Greig-Smith[6] says: Ventral hernia, so-called, is simply a stretching of scar-tissue, which permits the abdominal contents to escape through the parietes, and to bulge outwardly under the skin. There is no neck, as in umbilical hernia, and no dissection of skin from parietes by burrowing omentum, or intestine as in umbilical hernia. The hernial sac is simply stretched peritoneum, the coverings are stretched cicatricial tissue with a little fat and stretched skin.

To cure this condition, it is necessary to remove or push aside the redundant and attenuated tissues, and bring into contact and keep in contact, the thick and non-yielding parietes.

To do this satisfactorily, it is rarely necessary to enter the abdominal cavity.

The accompanying illustrations (*Figs.* 11, 12) explain themselves :—

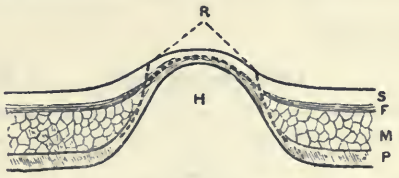


Fig. 11.—(*H*,) Placed in the hernial pouch; (*R*,) Skin between dotted lines to be removed; (*S*,) Skin; (*F*,) Fascia; (*M*,) Muscle; (*P*,) Peritoneum.

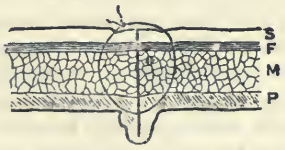


Fig. 12.—Shows the wound after closure. Redundant skin has been removed. The inturned peritoneum is shown as a pendulous fold hanging downward.

Sacless Hernia of the Sigmoid Flexure.—Mr. Anderson[7] describes three cases of sacless hernia of the sigmoid flexure, through the left inguinal canal. This condition occurred in three healthy men; duration of the hernia in two cases, of a few months; in the third, twelve years. In each instance, when the tumour was exposed, the dissection showed muscular wall on the convex side of a short coil of bowel, while on the concave side the tube was covered, for about half its circumference, by peritoneum, which extended upwards into the abdomen.

Mr. Henry Morris[8] also describes a case in which, as shown by the diagram (*Fig.* 13), he employed part of the sac to clothe the prolapsed sigmoid loop with peritoneum.

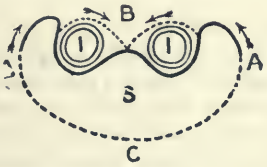
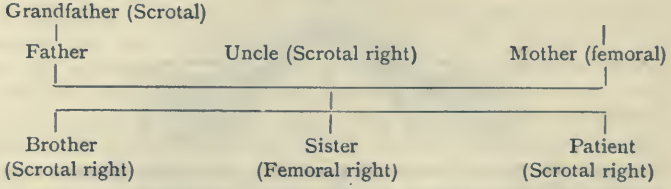


Fig. 13.—Shows arrangement of peritoneal sac to the bowel. The dotted lines show the part of the sac entirely removed. The arrows pass from *A*, where the sac was cut away, to *B*, where the cut-edge of the remainder of the sac was sutured round the gut.

Mr. Kynaston Couch[9] records interesting family history of hernia

in a boy, seven months old, with an enormous congenital scrotal hernia :—



The Parenchymatous Rupture Treatment.—Lindmore and Arnold [10] state that the fate which this treatment has met shows again that a practice which is based upon a crooked theory does not secure good results. If the leading thought of a technical procedure is not vested in anatomy and physiology, it cannot become a working theory; it has no foundation in reality, and if it be ever a success, it is a mere casualty, depending on fortuitous circumstances, the nature of which is unknown and can methodically, therefore, not be taken advantage of.

The first case on which the author operated was an aged individual with a severe scrotal hernia of long standing. As a rule, there was an easy reduction; but repeatedly strangulation had threatened, and when the writers saw the case the trouble had wrought secondary symptoms which rendered a remedial interference peremptory.

The injections were made at random. Since there was no fixed theory, the operator was at sea about whether the medicine would work better by being thrown in the midst of the ring or into the pillars of the same. But the lack of theory was no impediment to success. After one and a half or two dozen injections the breach was closed up. The invalid laid aside his truss, stood, and walked more erect, and was complimented on having added a half-score years to his life, if no more.

The cure remained by no means unique. But then cases which were not a tenth part so bad proved rebellious, and up to date it remains to the authors a sort of mystery why the most desperate of the cases got well so soon, while others, with nearly the same or a more careful treatment even, were left out, and had to be abandoned as incurable.

The remedy used was made up of tincture of arnica, sulphate of zinc, alcohol, and water. This mixture probably possesses no inherent virtues, but acts simply as an irritant. In the text-books and in journal articles describing the results of this treatment, the prescription has varied greatly. The use of alcohol alone is advised, injecting

PLATE IX.

not more than 10 to 12 minims at most. Some pain and smarting result, but are soon relieved.

A danger against which those who want to try the treatment must be warned is dependent on throwing the medicine, not into the outer or the inner ring, according to whether the case is direct or indirect, but between the two layers of the superficial fascia. Probably, in consequence of the profusion of lymphatics which are found here, the medicine is liable to cause lymphadenitis, which tends to discredit the treatment. The strength of the alcohol used is about 70 per cent.

REFERENCES.—[1] "Practitioner," Oct., 1895; [2] "Therap. Gaz.," Feb. 15, 1895; [3] "Cincinnati Lancet-Clinic," Sep. 22, 1894, and "University Medical Magazine," Jan., 1895; [4] "Annals of Surg.," April, 1895; [5] "Lancet," May 4, 1895; [6] "Annals of Surg.," April, 1895; [7] "Brit. Med. Journ.," Oct. 19, 1895; [8] "Lancet," Oct. 19, 1895; [9] Ibid., Oct. 26, 1895; [10] "Therap. Gaz.," June 15, 1895.

Infantile Hernia. *Henry Dwight Chapin, M.D., New York.*

Dr. Luton[1] reports five cases of umbilical hernia and six inguinal hernias occurring in seven infants, successfully treated by injections of **Artificial Serum.** The idea was that by driving an irritating substance into the borders of a dilated hernial ring, a formative inflammation is provoked followed by narrowing the closure of the opening. Dr. Luton employs for his injections phosphate of sodium, 5 parts; sulphate of sodium, 10 parts; and salt water, 100 parts. This liquid is injected beneath the skin in doses of 15 drops about the periphery of the hernial opening. One injection may suffice, but it is often necessary to repeat the operation three or four times at intervals of eight days.

REFERENCE.—[1] "Rev. Mens. des Mal. de l'Enf.," vol., xii., 1894.

HERPES ZOSTER. *Norman Walker, M.D., Ed.*

The photo (*Plate IX*) shows this disease affecting the arm of a boy, aged thirteen. Recently, there has been considerable doubt thrown on the connection of herpes with the nervous system, and it has been related to the blood vessels in preference. The disease undoubtedly occurs in epidemics; the larger one's material, the more certainly does he become convinced of that fact, and it is, in very many cases, quite impossible to indicate which nerve is the one implicated.

The plate shows very well the formation of the patches from the coalescence of a number of individual vesicles, and also the successive appearance of the different patches. As to treatment, all that can be done is to prevent the rupture of the vesicles and the consequent

formation of ulcers, which, in a carefully treated case, should not form. I have, I think, seen the younger patches aborted by covering them with **Unna's Zinc Lime.** At all events, it protects them from external injury, and hides them from the patient's view. For the pain, which is often very severe, the hypodermic administration of **Morphine,** or the internal use of **Antipyrin,** is generally sufficient. Indeed, in most cases, the latter acts "like a charm."

HICCOUGH (Obstinate).

W. Langford Symes, L.R.C.S., I., L.R.C.P., I., &c.

The most accurate definition of this affection may now be shortly stated to be "a reflex spasm of the diaphragm with subsequent closure of the glottis," the older views attributing it to spasm of the stomach or of the œsophagus having been long discarded.

ÆTIOLOGY.—Probably few pathological conditions, so distinctive in their features, have such an array of exciting causes, and, without embarrassing the subject with unnecessary classifications, these might, with great convenience and some advantage, be reduced to somewhat more order than has hitherto been granted them. It is no rare occurrence to find an incidental and temporary hiccough arise in the course of some abdominal disease, but the majority of these pass quickly away after an evacuation of the bowels, eructation, or vomiting. Similarly those transient cases—originating in irritating kinds of food, stimulants or condiments, or from the opposite conditions of fasting or gluttony, need not be taken into account since they rarely become persistent—are easily traceable to their exciting causes, and as easily removed. Equally obscure, however, are those prolonged and intractable instances which have been so long regarded as mere curiosities of medicine, whether they be periodic, annual, intermittent, "lasting for months," or sometimes even fatal; and if we carefully analyse many examples of this variety we will find that they readily fall into one or other of the following groups.

(1,) *Inflammatory.*—Hiccough frequently arises during the course of severe visceral inflammations, amongst the most frequent of which may be mentioned gastritis, enteritis, peritonitis, hepatitis, hernia, or internal strangulations of the bowel. It is here evidently dependent upon the state of inflammation, tension, and vascularity of the coats of the bowel, and in many instances has persisted unabated until the fatal termination of the case. In the several forms of ileus, and especially internal strangulation from the bands of lymph or adherent coils of intestine, it is almost invariably present, and one of the worst symptoms. Similarly in fevers, many instances will

be found to come under this heading, and to be dependent upon some localised inflammation of the gastro-intestinal tract. Its existence and significance in this class of diseases has been well described by Irish writers, who unanimously regard it as a very grave sign, when accompanying the floccitatio or carphology of the malignant and prostrate stages of severe typhus and enteric fevers. It is here usually associated with tympanites and meteorism, though it has been seen by several observers independently of digestive trouble, and apparently due to lesions of the nervous system. Thus, it is recorded by Graves that a corpulent man, labouring under typhus, hiccoughed for several days more than eighteen hours out of the twenty-four, and it was attributed by him to a congestive state of the gastric and enteric mucous membranes with flatulent distension. Again, in a recent Indian contemporary, we find that a retired officer of seventy-six years of age was attacked by obstinate hiccough after an acute congestion of the liver, the hiccough lasting seventy-two hours, and was eventually cured by a hypodermic injection of **Apomorphin** sufficient to produce vomiting, the selection of the remedy being based on the fact that a former attack of emesis checked the troublesome symptom.

(2,) *Irritative.*—The spasm resulting from temporary and removable causes may nevertheless be as obstinate and protracted as that arising from inflammatory conditions. Distension from flatus, worms, dyspepsia, irritation attending dentition and pressure on nerve trunks may give rise to the most persistent, and a fatal case from the last-mentioned cause is recorded by De Lens, where a patient suffering from pharyngeal abscess was attacked by hiccough, apparently due to pressure on, or implication of, the pneumogastric nerve, and death resulted from the exhaustion consequent on the spasm. Dr. Wynne Foot, of Dublin, communicated a case of a dyspeptic boy who hiccoughed for twenty-six weeks without intermission except during sleep, the convulsions averaging fourteen per minute. Eventually he was cured by a prescription of **Indian Hemp, Iodoform,** and **Conium.** It was here observed that the act of vomiting or preparation for it deranged its rhythm—an interesting circumstance, to which we will presently allude. Similarly, Dr. Edward Liveing tells us of a case in which the hiccough, attacking a girl of twelve years of age, persisted for three years, even during sleep, but varying in its duration from ten minutes to an hour, and recurring three or four times in the day and night. Under this variety of the neurosis the dictum of John Hunter should be borne in mind,

that he has seen it accompany local irritation after operations of various kinds.

(3,) *Specific.*—The most obscure and "Quixotic" example, however, of obstinate cases may be well described as "specific." This they decidedly are, for, where exciting causes are difficult or impossible to find, after a free evacuation of the bowels and removal of all states of tympanites or irritative digestive symptoms, the spasm frequently persists in rate, rhythm, and duration with undiminished intensity, no other definition will suffice. The evidences of local inflammation, or a pronounced neurotic diathesis, are here not found, while the system in which it occurs may be discovered to be almost saturated with some specific poison. This will be clearly manifest if the constitution in which it is met with be subjected to a careful scrutiny, and is frequently corroborated by the magic success of a wisely constructed specific treatment.

For instance, it has been found to persist for a considerable time after a fit of tertian ague, and was here observed by Lanzoni and Bartholin to alternate with convulsive attacks of sneezing. Again, M. Widal has recorded a remarkable instance, due apparently to the specific influence of the malarial poison. A man was admitted under his care for some passing cerebral congestion, and five or six days later, after taking alcoholic liquor in some quantity, was seized with violent hiccough, which resisted all antispasmodic treatment. It was so loud as to be heard outside the hospital, and persisted at the rate of fifty-five per minute—a most extraordinary record—all the muscles of the trunk participating in the spasm. After the failure of several remedies, **Quinine** in "pretty full" doses put an end to the disorder, which had lasted continuously for nineteen days.

Probably few more typical examples of the "specific variety" can be found than those occurring in connection with the gouty diathesis where the gastric disturbance appears to be substituted for the usual articular inflammation. In noticing hiccough as a symptom of gout in connection with vomiting and other gastric symptoms, Dr. Gairdner remarks: "Very obstinate hiccough is a frequent attendant of this form of gout. I have seen it distress patients by day and night without any intermission for a great length of time. It often comes on after a sudden suppression of the discharge of urea and urates by the kidneys, and I regard it as an unequivocal sign of approaching death." This gloomy prognosis is also partially shared by Fothergill, who says: "Certain it is persisting hiccough is always held to be of bad omen, though I have seen it pass away along with other grave symptoms." With reference to the state of the kidneys

in the foregoing case, the urine deposited a good sediment of lithates, the only peculiarity being its intense acidity and minute quantity of albumen. No sudden diminution of the urates was observed.

(4,) *Neurotic.*—That a certain proportion of these cases have an origin purely "nervous" is beyond question, and the fourth variety of this curious malady exemplifies some of its most interesting phases. By the term "nervous" we would wish to be understood the fact, that the originating influence or stimulus is one primarily acting on or through the nervous system, without any preceding state of inflammation, irritation, or blood poison. Such have been described as presenting themselves in the course of hysteria, epilepsy, after fright, shock, myelitis, or sudden mental emotion. It is therefore easily understood that, in cases arising from this species of influence, the spasms are, if possible, more erratic, curious, and unaccountable, whether it be in their violent character, strange periodicity and recurrence, their unusual persistence, or yet their fatal termination. Thus Sir Thomas Watson mentions an instance in his lectures of an "hysterical affection of the diaphragm" of a very obstinate character, in one of his hospital patients—a girl who sat all day long in her bed uttering every eight or ten seconds a loud and most discordant hiccough. Dr. Foot, of Dublin, tells us of the case of a servant maid, whose bedroom was suddenly entered by the police in the execution of a search warrant—she was so frightened and hurt by this procedure, that she was immediately seized with an uncontrollable hiccough, ran away on foot to her home, some thirty miles distant, and died within a short time of the hiccough and shock.

PATHOLOGY.—The pathology of hiccough, for a long time a debated point, is now believed to be a reflex spasm of the diaphragm with simultaneous (?) closure of the glottis, having as afferent nerve the pneumogastric, and efferents the phrenic (?) and recurrent laryngeal. Formerly accepted as the *fons et origo mali*, the part played by the phrenic nerve in the production of hiccough has, I believe, been erroneously exaggerated. To my mind, from clinical observations alone, the sympathetic connections of the semilunar ganglion seem far more likely to convey the impressions than the phrenic, and for the following reasons: (1,) The diaphragm appears to contract before the laryngeal muscles, pointing to a closer and more direct communication with the gastric portion of the vagus than even the recurrent laryngeal; (2,) The course of the phrenic nerve is healthy, and its respiratory function perfect; (3,) The patient has no control over the spasm, while the phrenic is always subservient to one's will; (4,) Remedies applied to the origin or course of the phrenic or to the

cervical spine, such as blisters, ice-bags, compression, etc., etc., have no effect; while those directed to the diaphragm, stomach, and solar plexus, are generally curative; (5,) The connection between the pneumogastric and phrenic by means of the third, fourth, and fifth cervical nerves are remote, and if this were the route taken, the impression must travel more than double as fast on the phrenic than it does on the recurrent nerve, since it reaches the diaphragm before the larynx—conditions which are unphysiological; (6,) The experiences of Romberg and Bright, which show that direct irritation of the phrenic will not produce hiccough; (7,) The existence of a perfect reflex-loop between the stomach and diaphragm, which more directly answers the purpose, separate from the function of respiration and beyond control of the patient; (8,) It being influenced by the acts of deglutition, or vomiting, to a greater degree than by any respiratory efforts.

During sleep its observation is a matter of the greatest interest. It is much less frequent. The impulses seem imperfectly transmitted or aborted, being only of sufficient strength to produce a true convulsion every second breath; while, finally, by the deepest sleep they are so weakened that the diaphragm may escape for four respirations the transmitted current from its afferent nerve.

As a typical example of a perfect reflex action, a true neurosis, there is, perhaps, not its equal in pathology.

The influence of the act of swallowing, which is undoubted in allaying it, is, I believe, due to the employment of the pneumogastric for this purpose as much as possible, in the mechanism of which it is largely engaged, and thus detracting from its truly gastric function, rendering it, as it were, less sensitive to, and less capable of conveying with precision, the morbid impressions arising within the stomach. In this connection it is to be noticed, that in Dr. Foot's case, and also in that of the retired Indian officer, the act of vomiting had similarly a marked influence over its rhythm and duration.

PROGNOSIS.—The facts we possess seem to warrant the conclusion that the "inflammatory" and "specific" varieties are as a rule of decidedly more serious import than those of the "irritative" or neurotic type. Thus, in inflammation of the bowels, ileus or hernia, it does not supervene until the disease has reached a considerably advanced stage. In fever, when apparently due to local inflammation of the intestines, it is of grave significance, seeing how readily such a condition may lead to perforation of the bowel, but in the absence of other evidence of such inflammation or severe nervous symptoms, it is frequently caused by flatus, distension, or intestinal

irritation of a removable character. In the aged and debilitated, the gouty subject with imperfect kidneys or the very highly nervous or neurotic individual, hiccough can by no means be regarded as otherwise than a serious symptom.

TREATMENT.—This is a matter of extreme difficulty on account of the multiplicity of remedies. It might be advantageously divided into: (1,) Empirical; (2,) Antispasmodic; and (3,) Physiological.

Under the first heading would come almost every known drug or household remedy, of which the most efficacious I have found to be—very frequent acts of swallowing saliva, sips of liquids, or spoonfuls of arrowroot, so as to prolong the act of deglutition, and thus exhaust the pneumogastric nerve.

Raw Whisky, Vinegar, and **Eau de Melisse,** act frequently magically, also **Hot Brandy-Punch,** or a **Mustard Blister** over the epigastrium.

Of antispasmodic remedies, **Chloral Hydrate** was used with success in the gouty example we have given, and might be replaced by such as **Nitrite of Amyl, Calabar Bean, Cocaine, Hydrocyanic Acid, Atropin, Morphin, Nicotin, Conium** or **Succinum.** The physiological treatment, however, will depend upon an accurate diagnosis of the conditions under which it occurs, of the constitution in which it is met with, and of the probable nature of the irritation to which the gastric or œsophageal branches of the vagus are subjected; and since it will ever be found better practice to treat disease, however slight the ailment, upon physiological grounds, than blindly follow the crude dictation of empiricism.

(1,) *Inflammatory.*—In the plethoric and obese, benefit frequently follows **Bleeding,** while the application of hot fomentations of **Poppy-heads** or **Laudanum,** or **Belladonna** with **Glycerine,** warm poultices, **Leeches,** blistering, etc., must be determined according to the particular organ affected.

The act of vomiting has frequently proved curative, and for this purpose **Apomorphia** may be given subcutaneously. The relief of the bowels must be undertaken according to individual conditions, *e.g.*, **Emollient Injections** or a bland mixture of **Glycerine and Castor Oil** administered in warm milk, are usually most expedient in acute intestinal inflammations. Symptomatic fever, if high, may be met by **Tincture of Aconite** ♏ 2 in **Liquor Ammonii Acetatis** every two hours, combined with some such antispasmodic as **Opium, Morphia, Cocaine** or **Belladonna,** and, together with the application of **Leeches** or an **Ice-bag** to the epigastrium or inflamed viscus, will probably relieve the hiccough. In that rare disease, acute gastritis, sometimes met with in old men or in the early stages of malignant disease, such a prescription as

Bismuth, Carbonate of Magnesia and Cocaine with **Prussic Acid** will relieve. In acute obstruction of the bowels it is needless to remark that hiccough should never be waited for as an indication of urgency, since many fatal cases never present it.

(2,) *Irritative.*—When a case of persistent hiccough presents itself unaccompanied by any visceral inflammation, high fever, or other acute illness, a careful examination should be made of every organ to seek some lurking cause of the irritation. Though such strange affections as dentition or pharyngeal abscess have produced it in this form, its source will most frequently be found in the digestive system. Particular attention should be paid to the conditions of health prior to the onset of the hiccough. There is always a definite and tangible origin in these cases. Something brought it on, and still keeps it up, and unless this factor can be recognized by the physician, our treatment will be mainly empirical. In conditions of flatus and distension, when this appears the sole ailment, a free purge of **Castor-oil** with **Turpentine** will effectually clear the "primæ viæ," and would be a suitable antecedent to sedative and carminative remedies. If the flatus continues, a pill of **Carbolic Acid, Nux Vomica,** and **Iodoform** might be prescribed twice a day, with such a mixture as the following, every two or three hours, as recommended by Dr. T. W. Allen :—

℞ Olei succini	℥ss	Mist. acaciæ	℥ij
Liquor Potassæ	℥j	Aquæ menth. pip. ad.	℥vj
Tinct. Camph. co.	℥iv		

Sig.—One-sixth part every two hours.

Two doses usually succeed. Still, failing relief, a powder, as prescribed in the preceding class, of **Bismuth, Magnesia,** and **Cocaine,** should be taken in milk every third or fourth hour ; or one composed of 6 grains of **Musk,** with **Bicarbonate of Soda** and **Magnesia,** which has been recently recorded as successful in a persistent case by Dr. Rattray.

(3,) *Specific.*—In no class of cases of this spasmodic affection will empirical remedies prove more futile than this. Useful, however, they frequently are, and will check it suddenly and repeatedly, but rarely permanently. Here a physiological basis for our treatment is, if possible, more necessary. One should minutely examine the system with caution, and having become acquainted, as far as possible, with the functional capacity of each organ, prescribe rather for the general condition of the patient than pay any special attention to the hiccough. It is merely a symptom of some definite, though obscure, irritation, and we should find it. For the moment, however, discard it ; and after the treatment has been well directed to the relief of any local

irritation or constitutional diathesis, add to prescription some carefully selected sedative or antispasmodic.

Thus, in the obstinate gouty instance alluded to, the combination of **Bromide, Iodide,** and **Bicarbonate of Potassium,** with **Chloral,** successfully removed it. **Quinine** has cured a so-called malarial variety ; and other cachexiæ will be found equally amenable to a carefully constructed and systematic treatment.

(4,) *Neurotic.*—In this last variety of persistent hiccough the most varied remedies have been successful, though it has sometimes continued unrelieved until the death of the patient from exhaustion. **Jaborandi** and **Pilocarpine** appear to have a specific influence over this form of the neurosis. They have frequently checked it permanently.

Nobel[1] refers to the marked benefit derived from the infusion of jaborandi administered to a man suffering from influenza. It produced some slight cyanosis, but appeared to have no further ill effect upon the heart. He declares it is still unknown to what ingredient its efficacy is due. Stiller[2] states that he has frequently prescribed pilocarpine in doses of 10 minims of a 1 per cent. solution, three or four times a day, in hiccough of a nervous origin, and believes it is the best remedy known for this condition. It is, he says, unsuitable to attacks of the acute inflammatory type, and in hysterical instances is not so beneficial as in other forms. To pilocarpine he entirely attributes the specific influence of jaborandi. Dr. De Havilland Hall subsequently relates the success of $\frac{1}{10}$ of a grain of pilocarpine injected hypodermically three times a day, when other remedies had failed. The hiccough, which had been unremitting for a fortnight, at once lessened, and soon ceased entirely.

The various forms of **Electricity** should, in obstinate cases of this species, be tried. Laennec cured nervous instances with "magnetic" plates applied to the epigastrium and opposite region of the spine, and Dr. Henry Kennedy has related a cure by a three weeks' course in a persistent case of seven weeks' duration.

Apart from the more strictly local nervous spasm, the general neurotic condition must be kept in view. **Asafœtida, Valerian** or **Valerianates,** together with the foregoing carminatives or sedatives, are often useful. **Blisters, Ice** to the epigastrium, and **Cold Shower Baths**—from the physiological effects of shock on the pneumogastric nerve—would be well calculated to arrest spasm of this nature.

M. Leloir[3] states that he stopped hiccough in a child of twelve years by digital pressure for three minutes on the phrenic nerve between the attachments of the sterno-mastoid. He also speaks of having used the

same method in a number of cases, and always with success. We are inclined to question how M. Leloir could with exactitude confine his pressure to one nerve in such a region as the neck, and whether the contiguous pneumogastric or even the superior and inferior cardiac nerves would not probably be included? The writer's experience is that it is misleading to attach so much importance to the *rôle* of the phrenic nerve, as it probably has much less to do with the spasm than is often supposed, and pressure upon it will be scarcely more efficacious than upon others even so remote as the supra-orbital, the pneumogastric probably excepted.

Hypnotism has not as yet been advocated as a remedy for hiccough, but there seem to be good grounds for assuming that in neurotic cases good results might follow its careful use.

N.B.—For a fuller consideration of this subject with detailed notes, the reader is referred to "The Dublin Journal of Medical Science," January, 1895.

REFERENCES.—[1] "Centralblatt für klinische Medicin," No. 32, 1892; [2] Ibid., No. 42; [3] "Revue des Malad. de L'Enfant," March, 1893.

HYDROCELE. *Priestley Leech, M.D., F.R.C.S.*

At present hydrocele is usually treated by means of an open incision. The following method is recommended by Neumann[1], of Vienna, and as no general anæsthetic is required, it is likely to be useful in private practice. The hydrocele is tapped in the usual way with a trocar and cannula, but the latter is left in the sac to act as a drain; a slightly compressing bandage is then applied over cotton wool. The cannula is removed on the second or third day. Dr. Morgan Vance passes a fenestrated drainage tube through the cannula, after withdrawal of the trocar, removes the cannula and leaves the drainage tube *in situ*. For two or three days the sac is irrigated through the tube with a mild antiseptic. The tube is shortened at the end of three days and then removed.

Buschke[2] thus treats hydrocele: A trocar is driven into the lower portion of the sac, and the fluid allowed to escape; the sac is washed out with a 3 to 5 per cent. solution of **Carbolic Acid.** The trocar is then pushed through the sac and brought out at its upper end, and a fenestrated drainage tube is passed through a cannula, thus allowing the inflammatory secretion to escape without accumulation into an aseptic pressure dressing. No anæsthesia is required. The tube is removed on the fourth to the sixth day. Cicatrisation requires eight to ten days.

REFERENCES.—[1] "Practitioner," Feb., 1895, [2] "Therap. Gaz.," March 15, 1895, quoted from "Rev. de Thérapeutique," Jan. 15, 1895.

HYPERIDROSIS. *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

Legoux[1] recommends :—

℞ Liquor Ferri Sesquichlor. 38·0 | Ol. Bergamot 2·0
Glycerini 10·0 |

Sig.—Apply with a brush every morning.

REFERENCE.—[1] "Therap. Blätter," July, 1894.

Synopsis.—(Vol. 1895, p. 320.) **Diachylon Plaster Dressings** (Hebra). Strapping the feet with **Stout Lead** or **Soap Plaster** (Duffin). Chemically drying materials, *e.g.*, **Alcohol** with **Tannin**, or **Naphthalin**, or **Salicyl-Talc**, or **Salicyl-Tannin**, **Starch Powders** or **Sulphur**. **Chromic Acid**, 5 to 10% solution, applied and followed by **Antiseptic Powder**; **Perchloride of Iron** and **Glycerine**. Neebe's treatment by local baths of **Hydrochloric Acid**, and for galled or tender feet a preliminary dusting with **Salicyl. Talc** or **Compound Talc Powder**; painting with 10% **Nitrate of Silver Solution**. Sympson treats bromidrosis by dipping the socks in **Warm Solution of Boro-glycerine**, and drying before wearing them, and the same practice may be tried with **Carbolic Lotion**, 1 in 40. **Salicylic Acid**, as used in the German army, foot-baths of strong **Carbolic Lotion**, a paint of **Glycerine of Carbolic** and **Tannic Acids**, **Castor Oil** rubbed in, painting with **Ferr. Perchloride** and **Glycerine**, **Naphthol Spirit Lotion** and **Naphthol-Starch Powder**, and a combination of **Pot. Permang.**, **Sod. Salicyl.**, **Bismuth Subnit.** and **Talc** to be dusted into the shoes, have all been recommended. **Iodol** as a dusting powder. **Lead Lotion**. The **Extract of Hydrastis Canadensis** internally. For blisters and excoriations of the feet **Ichthyol** is effective, and in the German army a mixture of **Black Soap**, **Water**, **Soft Paraffin** and **Zinc Oxide** is used.

HYSTERIA. (See "Nervous Disorders of Women.")

HYSTERO-EPILEPSY. (See "Nervous Disorders of Women.")

IDIOCY.

Synopsis.—(Vol. 1895, p. 324.) Some good results have followed the use of **Thyroid Extract** in sporadic cretinism. **Craniectomy** for microcephalus and idiocy generally is deprecated by Jacobi, and advocated by Horsley. In cases of mental dulness the question of adenoids playing a part must be considered.

IMPETIGO.

Synopsis.—(Vol. 1895, p. 330.) **Dilute Ammoniated Mercury** is the chief British remedy. The French formulæ include **Boric Acid**, **Salicylic Acid** with **Zinc Oxide**, **Plaster of Vigo**, **Lead Acetate** with **Salicylic Acid** and **Zinc Oxide**, **Oil of Cade** with **Yellow Precipitate**.

INFLUENZA (Skin Symptoms of). (See "Erythema.")

INSANITY. *Græme M. Hammond, M.D., New York.*

Thyroid Feeding in the Insane.—Bruce[1] has employed **Thyroid Extract** in twenty-three cases in the Royal Asylum at Edinburgh, comprising cases of mania, melancholia, general paralysis, syphilitic, alcoholic, puerperal, lactational, and climacteric insanity.

He reached the following conclusions: (1,) By the internal administration of thyroid extract a true febrile process can be induced, and the resulting reaction is beneficial to the patient; (2,) The amount of the drug necessary to induce physiological action varies in different individuals, but it is seldom necessary to give a larger dose than 60 grains of the extract daily; (3,) Excessive and prolonged administration of the thyroid extract produces gastric irritation; (4,) The use of thyroid extract in the treatment of the insane is accompanied by a certain amount of danger from induced heart weakness. This danger can be minimized and almost discounted by confining the patient to bed during treatment and for some days afterwards; (5,) The administration of the extract is contra-indicated in cases of mania where the excitement is acute, the loss of body weight rapid, and there is danger of exhaustion from malassimilation of food; (6,) Thyroid treatment appears to be especially useful in the insanity of adolescence and in the climacteric and puerperal periods; (7,) It is frequently useful in cases where recovery is protracted; (8,) In cases of long standing where there is a tendency to drift into dementia a course of thyroid treatment sometimes gives the necessary stimulus which leads to ultimate recovery; (9,) Patients under treatment should be kept in as equable a temperature as possible; (10,) As far as observations on general paralysis go, the results are sufficiently satisfactory to render benefit hopeful if the patient is treated at an early stage of the disease; (11,) Finally, such results as have been attained cannot fail to make an impression on those who have the responsibility of treating the insane, and are anxious to use every method to help in furthering their cure.

The author considers that in thyroid feeding we possess a valuable addition to our armamentarium in the treatment of insanity.

Hypothermia in the Insane.—J. B. Bouchaud[2] in considering the subject of calorification being one of the functions of the nervous system, states that variations, due to many derangements of mentality, frequently occur. He reports thirty cases in which lowered temperature occurred in the insane. He considers it to be a state of inhibition in persons whose nervous system is profoundly weakened. (See also "Mania.")

Degeneration.—The theories of Lombroso and Maudsley have had a tendency to mark most men with some evidences of stigmata. These views received fresh vitality from a recent publication on this subject by Max Nordan.[3] This author's opinions are not altogether accepted, as may be seen from a perusal of a recent review of this subject by C. L. Dana,[4] an abstract[5] of which is worth recording. He says the

final work of modern physiognomy will not be to fix upon human beings any stigmata which marks them as successively useless, defective, or dangerous. We have not discovered a type of criminal man, or of the insane man, or epileptic, or neurotic man. All these have common marks, which show simply that they belong to the same somewhat handicapped family. Their presence in an individual will show that he must be especially careful in educating and using his natural powers.

The discovery of degeneracy throws an additional responsibility upon him, for there are few so bad but that, with a proper environment, they can get along successfully in life. There may be some born criminals, but they are very few; the majority are simply persons of a degenerate type, who fail to husband the endowments they possess. We do not excuse the cripple who attempts to become a sprinter, nor should we excuse the morally defective who indulges in debasing habits and low temptations. All modern studies seem to show that man must be more than ever careful of his education, his training, and his surroundings, and of using all possible moral and spiritual agencies to strengthen his defects and make his powers more stable. The future of the degenerate depends enormously upon these factors, and his responsibility lies in his following that line of life which is right for him. By this means one can render many defects harmless, and make the unstable almost as firm in judgment, and healthful in body, as the happy possessors of perfectly healthy and balanced organizations.

REFERENCES. — [1] "Journ. Ment. Science," No. xli. p. 50, 1895; [2] "Ann. Med. Psych.," No. 2, 1894; [3] Degeneration, Translation, D. Appleton and Co., 1895; [4] "Med. Record," Dec. 15, 1894; [5] "Journ. Nerv. and Ment. Dis.," Jan. 1895.

Synopsis.—(Vol. 1895, p. 332.) In acute mania, with good bodily health, **Hyoscyamine** or **Hyoscine** hypodermically produce temporary quietude. Of the former 3 or 4 tablets, each gr. $\frac{1}{30}$, or more may be required, and initial daily doses of gr. $\frac{1}{30}$ for women and $\frac{1}{20}$ for men are recommended. Hyoscine, gr. $\frac{1}{100}$, is the dose for an untried patient. To procure sleep 20 to 40-grain doses of **Chloral** is most certain if thoracic organs are healthy. If tendency to acute delirium exist all these drugs should be avoided, and warm wet packs, copious fluid diet, meat juice, meat soups with onions, and warm spirit and water at bed-time should be given, also forcible feeding if alimentation is insufficient. **Cannabis Indica Tincture**, ℥ss to ℥j, two or three times a day, is sometimes of service. **Pilocarpine Hydrochlorate** or **Nitrate** in small doses hypodermically for cases tending to acute hysterical insanity. Bromides are better avoided, as they reduce strength. In private house treatment tonics, as **Quinine** and **Iron**, are best. Strychnine increases excitement. For constipation 1 to 3 2-grain **Cascara Tabloids** at night. Milk and eggs are the best diet, which must be copious, nutritious, easily assimilated, and require little or no mastication. For climacteric cases **Iron and Quinine, Fellow's Syrup** and

Arsenic; Bismuth, especially Lac. Bismuthi, with Calumba; Rhubarb and Gentian; Cod-liver Oil, are indicated. Sulphonal, in 20 to 40-grain doses relieves insomnia, and its action is helped by Gray Powder. Ammonium Bromide, 10 to 15 grs. twice daily during the tonic treatment, diminishes irritability. 1 to 3 2-gr. Cascara Tabloids at night for constipation. Salix Nigra Liquid Extract in 1-drachm doses every six hours relieves dysmenorrhœa better than anything except Morphia hypodermically. No alcohol must be used, and if drink habit exists Gentian, Nux Vomica and Capsicum are indicated. Paranoia is really best treated outside an asylum; and tonics are best with Ammonium Bromide, ʒss, or Salix Nigra Liquid Extract, ʒj doses in erotic and expansive religious cases. For auditory hallucinations small doses of Morphine or weak Galvanic Current to the head. For visual hallucinations small doses of Cannabis Indica. Cold Shower or Plunge Baths and Sea Bathing, if not contra-indicated by physical and other conditions. Forcible feeding may be necessary. Aloin hypodermically in 1 to 3-grain doses for constipation.

Insanity due to Uterine Disorder. (See "Nervous Disorders of Women.")

INSOMNIA. *Priestley Leech, M.D., F.R.C.S.*

TREATMENT.—Dr. G. Van Schaick[1] draws the following conclusions: (1,) Insomnia from whatever cause is an important complication of surgical disorders; (2,) Its relief is necessary to the comfort of the patient, improves the prognosis, and materially assists recovery after operations; (3,) Where pain is the chief factor **Morphine** is indicated; (4,) There are many surgical disorders in which insomnia may be relieved by **Trional**; (5,) Trional is an excellent drug for the purpose, acts rapidly and safely and has no unpleasant after effects, is well-borne by the stomach, and is easily absorbed by the rectum.

(From personal experience in several cases I can bear out Dr. Schaick's conclusions—P.L.) (*See* also "Hypnotics," p. 45).

REFERENCE.—[1] "New York Med. Journ.," Mar. 2, 1895, p. 268.

Insomnia of Children. *Henry Dwight Chapin, M.D., New York.*

Dr. A. Claus[1] advises **Trional** in the insomnia of children. He has employed it in nocturnal terrors, epilepsy, dentition, gastritis and in two cases of insomnia following measles. His conclusions are as follows:—

(1,) Trional, in the dose of ½ to 22 grains, according to the age of the child, is a brilliant hypnotic. On the following morning neither headache nor heaviness of the head was noticed. Physiological sleep was favoured. Patients do not become accustomed to it. Sleep occurred in ten or fifteen minutes after its administration.

(2,) Trional has no very pronounced effect upon insomnia the result of pain.

(3,) Trional leaves the intellectual, respiratory, and circulatory functions untouched, and it has a favourable effect upon digestion.

(4,) In toxic insomnia, particularly that caused by alcohol, **Chloral** seems to be more active.

REFERENCE.—[1] "Internat. Klin. Rundschau.," Nov. 11, 1894.

INTESTINAL OBSTRUCTION. *A. W. Mayo Robson, F.R.C.S.*

Both physicians and surgeons are still far from agreed on the precise indications for surgical intervention in cases of intestinal obstruction. The wisest course would seem to lie between the extremes. At first, medical treatment should be tried for a brief period, but the advice and help of the surgeon ought not to be delayed too long, since many cases are absolutely incurable, except by operation.

Intestinal Obstruction Dependent on Gall-stones.—In a paper given before the Royal Medical and Chirurgical Society (June 22nd, 1895), I described four classes of obstruction depending essentially on gall-stones :—

(1,) Acute obstruction caused by local peritonitis in the region of the gall-bladder leading to paralysis of the bowel. Of this variety I have seen several examples, all of which recovered without operation.

(2,) Volvulus of the small intestine, dependent either on the violence of the colic caused by the attack of gall-stones, or on the contortions induced by the passage of a large concretion through the small intestine. In two cases of this kind, in both of which operation was performed, recovery followed after simply untwisting the volvulus.

(3,) Mechanical obstruction due to the passage of a large concretion through the small intestine. Of the two cases described both recovered after enterotomy, with removal of the concretion.

(4,) Obstruction coming on after the original cause has disappeared, and depending on adhesions left by local peritonitis due to gall-stone attacks, or on narrowing caused by the healing of a fistulous opening through which a large gall-stone has made its way into the intestinal tract. (For report of cases see "Transact. of Soc.")

When I began to write the paper I found from answers to letters addressed to a number of the largest metropolitan and provincial hospitals, that out of about eighty thousand in-patients treated during the year, my own cases excepted, only four instances of gall-stone obstruction were reported, which shows that this form of intestinal obstruction is far from frequent, and certainly less common than I had expected.

In the first class (cholelithic attack) the diagnosis will not as a rule

be difficult, as the history of the occurrence of previous attacks of spasms, at times—though not of necessity—followed by jaundice; the similarity to these of the commencement of the attack in question; the severe and persistent pain, at first localized to the right side of the abdomen; the absence of distension at the commencement, and then the occurrence of distension on the right side only, becoming general later; the lateness of the onset of fæcal vomiting, and then only after continued retching; the existence of collapse at an early stage owing to the severity of the pain, which is usually relieved by a morphia injection; the usual absence of visible peristalsis; and lastly, the onset of jaundice if the concretion have reached the common duct, afford so much guidance that error will not often occur, especially if the patient be a woman of middle or old age. But that difficulties may arise is shown by the cases mentioned.

In the second class of cases (volvulus) a positive diagnosis is probably, for the most part, out of the question except after the abdomen is opened, as volvulus of the small intestine is an extremely rare event, and we know that, as in the third case, a large gall-stone may quietly ulcerate its way into the gut without any preliminary warning, the symptoms only arising when the concretion is passing through the small bowel; but in both cases related, in addition to the signs of acute obstruction, there was a well-marked localized swelling near the umbilicus, becoming hard at intervals when the paroxysms came on, pointing to the site of the obstruction; and in the fourth case there was not only the previous history of cholelithiasis, but the characteristic onset of a gall-stone attack followed by acute symptoms.

The third class of cases (impaction in small intestine) has given rise to much discussion on previous occasions, and I would only here point out that in many cases there is absolutely no previous history to guide one, and it is quite impossible to say whether or not the attack is one dependent on the cause in question, or on a volvulus or band or internal hernia which, if left, must almost inevitably lead to death, and that speedily. The age and sex, together with the history of chronic dyspepsia and pain in the hepatic region, are, however, well worth bearing in mind, as well as the early and persistent vomiting and visible peristalsis limited to the small intestines.

In the fourth class the symptoms are usually subacute or chronic, and have often been preceded by long continued constipation or partial obstruction; coils of intestine will usually be visible; and where the site is in the hepatic flexure of the colon, as in a case I lately saw, the vermicular action starting in the small intestine, and extending to the cæcum and ascending colon, stopping in the

region of the gall-bladder, pointed to the stricture which was the cause of the trouble.

TREATMENT.—The first class of cases will, as a rule, yield to medical treatment, and it can seldom be necessary or even advisable to resort to operation during the seizure, though, as in the second case, a subsequent operation may be required.

In the second class (volvulus), it would seem to me that operation holds out the only hope of success, as the obstruction being mechanical, nothing short of remedying the cause can be expected to be of use.

The third class of cases (impaction in small gut) has given rise to much discussion, as it is an undoubted fact that large concretions have safely passed through the alimentary canal after obstruction of several days' duration, but when it is borne in mind that there are no symptoms peculiar to this form of obstruction, and that the course pursued by an obstruction by a band or by an internal hernia may be exactly the same as in gall-stone obstruction, the surgeon who waits beyond the period when an operation may be undertaken with every hope of success, is incurring a very serious responsibility.

With regard to the method of treatment, after the abdomen is opened and the cause found, if the gall-stone can be crushed or needled through the intestinal coats, such may be done ; but I should prefer to incise the gut and perform enterorrhaphy, as it can be done very quickly and with very little damage to the bowel.

Dr. Greig Smith[1] records an interesting case of recovery after cœliotomy for volvulus of the sigmoid in a man, aged eighty-five. In his remarks on the case, he says : "Intestinal drainage as an accessory is scarcely inferior to removal of the cause of the obstruction in many cases as a means of getting the patient well. Properly managed, it can scarcely do harm, and adds nothing to the operative risk, while its benefits in reduction of the mortality are very conspicuous."

His method is as follows : A piece of rubber drainage tube, about two feet long, is introduced, stretched over the point of a probe through a small opening made in the gut ; this it fits tightly and puts on the stretch. A safety pin is now made to transfix the peritoneal and muscular coats of the bowel by the side of the tube and to pass through the side of the rubber tubing. This pin serves to keep the gut and tube attached, and, when the dressing is arranged, to prevent indrawing or extrusion of the gut. The parietal peritoneum is drawn forward and brought in contact with the visceral, so as to favour slight adhesion of the parts. Sutures are

placed closely above and below the drainage opening, which are not tied until the gut is returned inside. Rolls of boric lint are placed around the gut under the pin, and one roll above it (*Fig.* 14). Over all is placed a broad band of strapping, carried round the back and split in front so as to interdigitate. This prevents any chance of extrusion of the bowels, and keeps the parts at rest. The free end of the tube is placed in a bottle which lies by the side of the patient (*Fig.* 15).

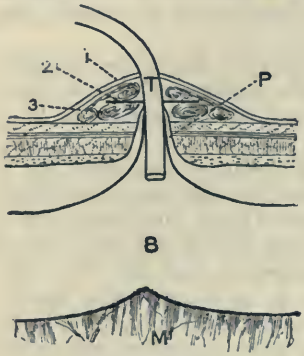


Fig. 14.—Diagram showing method of draining the intestine. *B*, bowel; *M*, mesentery; *T*, rubber tubing; *P*, peritoneum pulled outwards. 1, strapping; 2, pin-holding tube; 3, roll of lint.

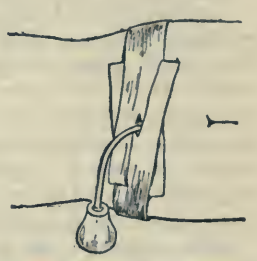


Fig. 15.—Showing arrangement for intestinal drainage.

Dangers of the Long Rectal Tube.—In spite of the condemnation of the long rectal tube by many eminent authorities, Mr. Harrison Cripps[2] says he still finds that in most cases of obstruction, or supposed obstruction, the tube has been introduced. Fortunately, these tubes are fairly soft, so that in a capacious rectum, when they impinge and are arrested about opposite the promontory of the sacrum, they simply coil up and do no harm. If stiffer ones are used, the patient's life is placed in imminent risk. A patient at St. Bartholomew's Hospital was to be operated on for ruptured perinæum, but died after an injection, which never returned. The soap and water and oil were found in the abdominal cavity, and a hole below a reduplicated fold in the upper part of the rectum. He says that these tubes cannot be passed into and beyond the sigmoid flexure, save in the rarest circumstances. As a means of diagnosis, or of treatment of stricture beyond the reach of the finger, tubes of any kind are absolutely useless. If a stricture is present, it would almost certainly catch in the cul-de-sac generally caused by the invagination of the stricture. If *stricture* is not present, the arrest of the bougie by the sacral promontory leads to delusive diagnosis. Brodie alludes to a case in which a worthy practitioner had spent over one hundred and fifty hours in dilating a supposed

stricture situated high up. At the post-mortem examination it was found that there was no sign of a stricture, the bougie becoming arrested by a curve of the sacrum.

REFERENCES.—[1] "Brit. Med. Journ.," July 20, 1895; [2] Ibid.

INTESTINAL SURGERY.

A. W. Mayo Robson, F.R.C.S.

In no branch of surgery has such progress to be recorded during the past year as in that of the alimentary canal, the advances not being shown so markedly in new inventions as in the successful application, or in the modification of older methods.

The accompanying diagrams (*Figs.* 16, 17) show a modification of the operation of enteroplasty, which I [1] performed on a girl of sixteen for simple stricture of the bowel. The patient made a good recovery, and is at the present time in very good health. The modification by the use of the bobbin presents the following advantages over simple suture: (1,) Rapidity of execution, since only two continuous sutures are required, one to unite the mucous margins, the other the serous; (2,) An immediately patent and efficient channel preventing tension above the newly joined gut; and (3,) Protection to the line of sutures until the lymph has been poured out.

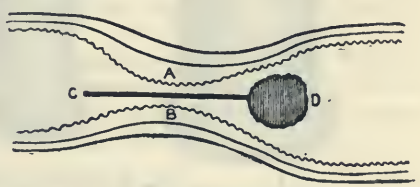


Fig. 16.—Operation for Enteroplasty. First stage, showing incision from Fistula *D* through stricture to *C*.

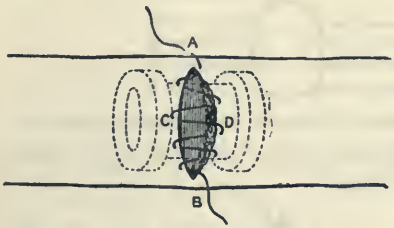


Fig. 17.—Second stage, showing sides of incision *A B* drawn apart, and ends *C D* approximated and sutured. Bone tube shown *in situ*.

In recording at the meeting of the British Medical Association in London, a series of cases of colectomy, I [2] remarked that after using and seeing used Senn's plates, Murphy's buttons, Paul's tubes, and the decalcified bone bobbins, I had returned to the use of the bobbin in enterectomy, preferring it not only on account of its (1,) simplicity and safety, but because it can be (2,) employed quickly, (3,) secures an immediately patent channel, (4,) leaves no foreign body permanently in the passage, (5,) avoids stricture by securing continuity of mucous surfaces, and (6,) that it can be adapted to any of the operations on the intestinal canal.

In the five cases reported in the paper the bobbin was used in four, and the button in one.

A modification of the bobbin shown in the accompanying diagram (*Fig.* 18) is the one I now employ, as the rounded ends make the introduction much easier; the principle, however, is in no way altered.

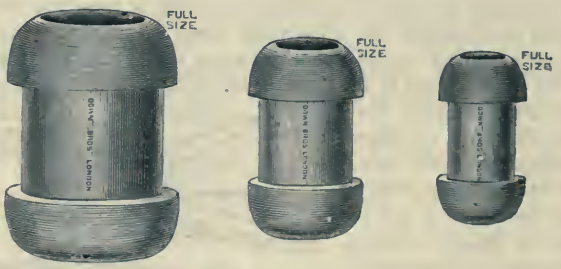


Fig. 18.—Modified Bobbins.

If time be a great object one continuous suture may be employed instead of two, and it may either take up the whole thickness of the intestine, as shown in diagram (*Fig.* 19), or it may leave the mucous

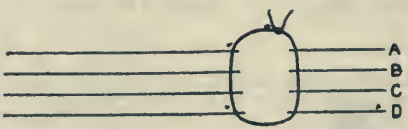


Fig. 19.—Continuous Suture. *A*, serous; *B*, muscular; *C*, sub-mucous; *D*, mucous.

coat intact, so that the two mucous edges will be brought together without being perforated (*Fig.* 20).

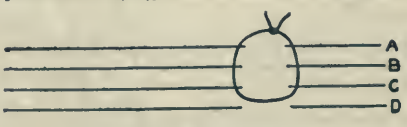


Fig. 20.—Continuous Suture.

The bobbins are made in several sizes by Messrs. Down Bros., St Thomas' Street, London.

At a meeting of the Medical Society, of London, Mr. Allingham [3] stated that he had operated on ten cases by intestinal resection, with six recoveries. He expressed his confidence in the use of Mayo Robson's decalcified bone bobbin in such cases, as it was absorbed after serving its purpose, and caused no obstruction or irritation.

Mr. Bidwell, in the discussion which followed, said that he preferred the bone bobbin, and that he doubted whether Maunsell's method was altogether reliable.

Mr. Bruce Clark preferred Maunsell's method, and said that in two cases with which he was acquainted the Murphy button had caused death by perforation.

Mr. Keetley read notes of three cases of intestinal resection with two deaths. He had employed Maunsell's method.

Dr. Emmerich Ullmann[4] (Vienna) has successfully carried out a method of resection of the intestine first suggested by Maunsell of New Zealand.

A fixation suture is passed through the thickness of both of the divided ends at the insertion of the mesentery, the knot being loosely tied on the inside *(Fig.* 21, *B, D).* The same is done on the opposite side (*A, C*), and then on the two lateral sides (*E, F* and *G, H*).

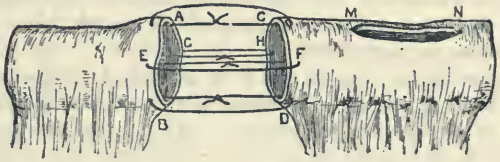


Fig. 21.—Resection of Intestine, with fixation Suture.

A longitudinal incision five or six c.mm. long is made in the distal segment on the side opposite the mesentery. Through this opening a pair of forceps is passed, and the sutures grasped and drawn up, thus drawing the end of the proximal segment through the slit and invaginating the end of the distal segment.

The mucous membrane of the proximal part looks inward, and that of the distal invaginated part outward, while peritoneum is in contact with peritoneum (*Fig.* 22)' The four sutures are then drawn taut, and tied. Other sutures are now easily passed, the knots being, of course, on the inside.

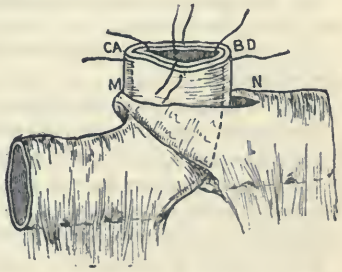


Fig. 22.—Invagination of Intestine.

The invaginated gut is now withdrawn, and the longitudinal opening closed. Silk is the suture material used. The danger of invagination is prevented, because the distal end is sewn into the proximal end.

Fourteen cases were subjected to button anastomosis after resection of the bowel for grangrene from internal obstruction; there was but one death, and that in twelve hours from exhaustion. There were twelve anastomoses following resection for gangrenous hernia, with two deaths, neither in any way dependent on failure of the button to play its part.

There were nine resections for fæcal fistula, with end-to-end approximation; all of these recovered. Murphy here states that the end-to-end approximation promises much more for the patient than does the lateral approximation.

Resection, with end-to-end approximation, was practised on thirty cases of malignant disease, with seven deaths. In one fatal case there was sloughing due to a too large button; in another there was gangrene of the bowel. As a result of the clinical experience here available, Murphy declares that the cicatrix caused by the use of the button does not contract, that there is no danger of obstruction from the button, and that extension of the pressure atrophy beyond the line of pressure does not take place.

Dr. Murphy claims that in cases of intestinal approximation the button has been of the greatest practical value. For instance, in (1,) Resection of bowel for grangrene; (*a*,) internal obstruction, (*b*,) hernia; (2,) Resection for fæcal fistula; (3,) Resection for malignant growths; (4,) For perforation; (*a*,) traumatic; (*b*,) pathological; (5,) Resection of rectum; (6,) Lateral approximation without resection.

The following points regarding the construction of the button should be noted before using it:—

(1,) The spring catches should hold firmly in all positions, and should be made of a metal that will not corrode with acids.

(2,) The elastic pressure cup should be on the *male* half of the button (never the female).

(3,) The edges of the pressure surfaces should be very smooth, and hemispherical in shape.

(4,) The spring under the pressure cup should not be too strong.

Personally, though preferring the bobbin as a rule in stomach and intestinal surgery, I always have by me both bobbins and buttons, and in certain cases where four or five minutes may make a difference in the result, as in acute obstruction, I employ the button, which I certainly believe to be an important and useful invention.

Mr. Herbert W. Allingham[5] suggests a new shape of the decalcified bone bobbin for use in anastomosis operations, to remedy certain disadvantages to which he considers the original shape renders the bobbin liable (*Figs.* 23, 24, 25, 26, 27).

The author recommends a tube of bone or ivory in the shape of two truncated cones with their lesser ends together, having the appearance of a small dice box (see *Fig.* 23). These are decalcified to within three-sixteenths of an inch of the centre (*a*), leaving at the junction of the two cones a hard unyielding portion.

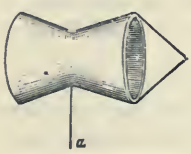


Fig. 23.

Fig. 24.

Fig. 25.

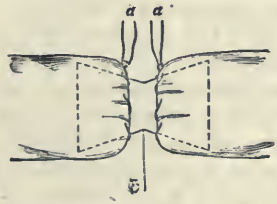


Fig. 26.

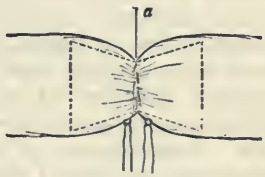


Fig. 27.

The author describes his method of using the bobbin in the entero-anastomosis as follows: "Into or around each piece of intestine a fairly stout continuous silk suture is passed, which should include in each stitch the peritoneum, the muscular coat, and the mucous coat (*Figs.* 25, 26). Then one end of the bobbin is inserted into one piece, and the suture is pulled tight by a knot twice threaded, so that it will not slip (*Fig.* 24 *a*), but the final tie is not made until the other end of the bobbin has been inserted into the other piece of intestine. After this one of the sutures is tightened up to its utmost; this brings the part down to the centre of the bobbin, for, as the bobbin consists of two cones with their apices pointing to its centre, the tighter the suture is drawn (*Fig.* 26, *a*) the more completely must it draw the intestine to the apex of the cone (*Fig.* 26, *b*), which has been inserted into it.

A similar tying of the other suture brings the other piece of intestine down to the apex of its cone (*Fig.* 27, *a*). Thus, from the shape of the bobbin, the parts to be united are brought into exact apposition, and at

the same time are pressed together. A few Lembert sutures may then be inserted at various points, or a continuous Lembert suture may be used all round, if that be thought necessary.

Dr. Landerer[6] (Leipzig) has experimently used a bobbin of the shape shown in the diagram (*Fig.* 28), and cut from potato or turnip, in entero-anastomosis on dogs. A running over-stitch is applied to either cut end, and the approximation completed by a few interrupted sero-serous sutures.

Fig. 28.
Dr. Landerer's Bobbin.

This, except in the use of the material employed, differs in no important particular from the bone bobbin which we have employed for several years.

Intestinal Suturing by means of Mechanical Rings.—Amat,[7] discussing this question, states that Murphy's buttons would be the most desirable method of uniting divided gut, were they not too heavy, too large, too small as to the central canal, and with edges too hard. He therefore prefers the apparatus of Bonnier, which is simple in construction, easy of application, small in volume, large of calibre, and soft as to surface. It is true this cannot be readily sterilized, but it is placed in a medium and in contact with surfaces which are themselves not sterile. A modification of this apparatus is especially desirable for coaptation of longitudinal wounds of the gut or of the bladder. Even to the skilled abdominal surgeon, versed in all methods of suture, Bonnier's apparatus will prove useful. To the unskilled, required to act in an emergency, it is invaluable, and should form a part of military hospital equipment.

Bonnier's apparatus consists of two ferrules, each armed with rings of cork, and provided with a number of points with fish-hook extremities. Each ferrule is introduced into an end of the bowel, and the points are thrust through from within outward, and then driven into the cork of the opposing ferrule, thus holding the bowel in apposition.

Modern Methods of Intestinal Resection and Anastomosis.—Konig,[8] whilst recognizing the fact that modern methods of establishing intestinal anastomosis by bone plates, metal buttons, etc., favour rapidity of operation, holds that a prolonged laparotomy does not lead to shock. He states that in the many operations he has performed for intestinal resection and anastomosis, he has never met with an instance in which death could be attributed to shock. In this conclusion, he states, he is supported by a large majority of his German colleagues. For this reason he is not disposed to substitute for older and safe operations,

which may take some time in their performance, rapid methods, the safety of which seems to him to be doubtful. That the use of Murphy's button may serve to extend the practice of resection, and thus enable inexperienced surgeons to perform these operations, is regarded as being, as far as the patients are concerned, rather a disadvantage than an indication of advance.

REFERENCES —[1] "Lancet"; [2] "Brit. Med. Journ.," Oct. 19, 1895; [3] "Ibid., Nov. 2, 1895; [4] "Centralblatt. für Chirurgie" No. 2, 1895; [5] "Lancet," Aug. 31, 1895; [6] Centralblatt. für Chirurgie," No. 13, 1895; [7] "Archives de Méd. et de Pharmacie Militaires," No. 4, 1895, "Therap. Gaz.," June 15, 1895; [8] "Centralblatt. für Chirurgie," No. 4, and "Brit. Med. Journ.," Feb. 16, 1895.

IRITIS. (See "Eye, Diseases of.")

JOINTS (Knee). *Priestley Leech, M.D., F.R.C.S.*

Luxation of the Semilunar Cartilages.—The functions and lesions of the semilunar cartilages of the knee joint have been lately minutely studied by Paujat.[1] He gives a description of their physiological and anatomical mechanism, and asserts that exaggerated or abnormal movements of the semilunar cartilages may cause partial rupture of the synovial membrane of the knee joint, and partial or complete laceration of the ligaments and tendons attached to these structures. Laceration of the ligaments of the semilunar cartilages often constitutes the sole lesion in sprain of the knee, though this is often associated with rupture of the stronger ligaments of the joint. The special signs of such laceration are ecchymosis, pain, and circumscribed swelling. He gives four varieties of luxation of the semilunar cartilages: (1,) Luxation without; and (2,) Within the femoral condyles; (3,) Luxation backwards; (4,) Luxation forwards.

The first form is the only one which is known clinically; its chief symptoms are prominence of the injured cartilage, which presents itself, diminishes, and altogether disappears in certain definite positions of the leg. Inflammation external to or within the semilunar cartilages plays a considerable part in the clinical history of luxation of one of these structures. The prognosis in sprained knee with laceration of the semilunar cartilages depends on two main factors—the greater or less extent of the laceration, and the more or less marked development of the inflammation around or in the structure of the displaced cartilage.

TREATMENT consists of bandaging over layers of wool and prolonged immobility of the knee, with the limb fully extended. In obstinate cases it is justifiable to open the joint, and either fix the

loose cartilage by suture, or to perform partial or total resection of this structure. Cases are given, and the paper is illustrated.

REFERENCE.—[1] "Rev. de Chirurgie," No. 2, 1895; Epitome, "Brit. Med. Journ.," March 23, 1895.

JOINTS (Tubercular). *Priestley Leech, M.D., F.R.C.S.*

TREATMENT.—There has been a tendency of late, more particularly abroad, to treat tubercular joints by non-operative methods.

E. Kirmisson[1] says the chief objects of treatment are immobilisation of the affected parts, and appropriate hygienic measures, and medicaments to improve the general health. If suppuration has occurred, injections of **Iodoform** are extremely serviceable. In two cases of large sub-periosteal abscess of the thigh, communicating with the knee joint, the results were particularly favourable. He uses 5, 10, and 15 grammes of a 10 per cent. solution of iodoform in ether.

Ferraro[2] reports a case in a man, aged thirty-seven, who had the right knee-joint enlarged, red and tender, and the joint contained fluid. An incision gave vent to a considerable quantity of flaky pus; in two or three weeks a focus of pus appeared in head of tibia, and another appeared later in the shaft of the tibia; these were scraped. Tubercle bacilli were found in the joint secretion. Ferraro then tried endo-articular injections of iodoform emulsions in sterilised glycerine (1 in 10), at intervals of twenty to twenty-five days. After each injection there was fever, with its maximum on the second or third day. Slight improvement followed the injections, of which five were given. The patient being dissatisfied, excision of the joint was done. It was then found that the joint cavity was full of a mass of adipo-muco-fibrous tissue, the caseous substance being almost gone, the osteitic foci cured or in process of cure, and the tuberculous nodules undergoing fibrous change. No bacilli were now found. The iodoform probably acts by exciting a reactive inflammatory process with formation of new connective tissue.

M. Kirmisson[3] uses the *actual cautery* in cases of tubercular arthritis. He uses the fine point of the thermo-cautery. The patient is anæsthetised, and the region of the knee disinfected as in excision. Any vicious attitude of the limb is corrected, tenotomy being done, if necessary. Cauterisation is then done over the places where the fungosities are most prominent; in the case of the knee, at the level of the bursa underneath the quadriceps extensor tendon, at the lateral parts of the patella, and at each side of the patellar tendon; often twelve, fifteen, or twenty punctures are made on the surface of the articulation. The joint is then covered with an antiseptic dressing,

the limb is immobilised in a plaster trough, and compression is made over the joint by a thick layer of cotton wool. He gives details of eight recent cases, and says the duration of treatment is short as compared with other methods.

REFERENCES.—[1] "Therap. Monatsh.," Jan., 1895 ; [2] "Il Policlinico," June 1, 1895, Epitome "Brit. Med. Journ.," July 13, 1895 ; [3] "L'Union Médicale," No. 51, 1895.

KIDNEY (Diseases of the). *E. Hurry Fenwick, F.R.C.S.*

Solitary Kidney.—Ballowitz[1] has collected as far as possible all the recorded cases of congenital absence of one kidney. Excluding cases of fused kidney, and of partial atrophy of one kidney, he finds two hundred and thirteen cases of complete absence of one kidney, upon which he bases the following conclusions: Such deficiency occurs almost twice as often in males as in females, a fact which may, however, be partly accounted for by the greater frequency of necropsies in males. As to age, twenty-three occurred in the fœtus or newly born, most having some other congenital deformity, especially imperforate anus ; the rest were about evenly distributed up to seventy years of age, after which only seven cases occurred. Taking all cases together, the deficiency is more common on the left than on the right side ; but while in males the left kidney is far more commonly absent than the right ; in females, the two sides show the defect equally. The renal vessels were generally absent, as also the ureter ; on the abnormal side (the latter in all except fifteen cases) the suprarenal was missing in thirty-one cases. The solitary kidney was almost always normal in shape and position, but much enlarged.

Microscopically, the enlargement would seem to be due rather to hyperplasia than to hypertrophy. The bladder, except for the opening of one ureter, was generally normal. In a large number of cases there were associated deformities of the organs of generation, especially of the female organs, and these were almost invariably on the side of the renal defect ; they affected the conducting portion much more than the glandular portion—that is, uterus, vagina, and fallopian tubes in the female, and vas deferens or vesiculæ seminales in the male, rather than the ovaries or testicles. Finally, he points out the practical bearing of the subject. For example, the probability of calculus, causing sudden suppression in such cases, and also the danger of surgical interference ; and suggests the possibility of diagnosing the condition by ascertaining the absence of the opening of one ureter in the bladder by means of the cystoscope ; and also the likelihood of its occurring when any abnormality of the genital organs is found, especially if this be unilateral.

Suppression of Urine from Shock after Nephrolithotomy.—A most important and instructive case is reported by McBurney[2] relative to suppression of urine after renal operations. Mr. McBurney removed a large calculus from the right kidney, and the patient, a man, aged fifty, recovered from suppression after the injection into a vein of the arm of a quart of salt solution. The details are as follows: The operation on the kidney was attended with but moderate bleeding, no ligature and no packing having been required for its control. In the course of the next twenty-four hours nausea began, and was followed by vomiting, headache, and symptoms of uræmic poisoning. There was no voluntary discharge of urine, and only four drachms were obtained by catheter during the first twenty-four hours after operation. The saline infusion was then injected, and was followed in the course of a few hours by the discharge of thirty-four ounces of urine; the patient steadily recovered.

On the Clinical Confusion between Distension of the Gall Bladder and Movable Kidney.—Henry Morris[3] says, more frequently the enlarged gall bladder is mistaken for a movable kidney; but, occasionally, the opposite error is made; not rarely the two "abnormalities" coexist.

Statistics show that enlarged gall bladder and movable kidney are from seven to nine times more frequent in women than in men. (Landau's tables show two hundred and seventy three women and forty-one men out of three hundred and fourteen cases of movable kidney.) The right kidney is nearly thirteen times more often moveable than the left.

Most of the women with movable kidney, and also those with biliary troubles, are multipara, though some are nullipara.

The symptoms common to movable kidney and enlarged gall bladder are as follows:—

Both enlarged gall bladder and movable kidney may present as a tumour in the right hypochondriac and umbilical regions. Either tumour may be capable of being pushed back into the loin or over to the left of the median line.

In both cases the tumour is more or less firm, or elastic, and smooth. In both cases it may be either very tender or not at all so. In either case it may be, or seem to be, round or oval, or shaped like an egg, a pear, an orange, or a sausage. Each may present a smooth, firm and rounded projection on its surface; in the case of the kidney due to a cyst beneath the front of the capsule; in the gall bladder to a calculus in a pouch in its anterior wall. Both may have a resonant or a dull note in front on percussion. Both give rise to various dyspeptic symptoms.

Either may give rise to paroxysmal attacks of severe colic, the maximum intensity of which is referred to the situation below the ribs on the right side of the abdomen. In enlarged gall bladder these attacks are due to the sudden impaction of a gall stone in the cystic duct ; in movable kidney, to kinking or rotation of the ureter or renal vessels. Either may give rise to jaundice. In neither case does the condition of the urine often help us, and sometimes it actually misleads, as there may be albumen in the case of distension of the gall bladder or bile in the case of movable kidney.

There are some conditions of the gall bladder which render the confusion all the more probable : (*a*,) The enlarged gall bladder is sometimes so much elongated and so curved that it resembles the reniform outline ; (*b*,) It can in some cases be pushed right back into the loin and there felt with the fingers pressed into the ilio-costal space ; (*c*,) The liver in some instances is so much displaced toward the pelvis that the gall bladder, if enlarged, gets doubled back beneath the liver and is felt more as a loin tumour than as an abdominal one.

Conversely, there are some conditions of the kidney which cause it to resemble an enlarged gall bladder : (*a*,) The kidney in some instances is tilted as on an inclined plane from behind forwards, with its lower end just behind the anterior abdominal wall, and then in position and direction it closely simulates the gall bladder ; (*b*,) The kidney is sometimes adherent to the right lobe of the liver as well as to the gall bladder, the adhesions allowing of free movements of the kidney across the umbilicus as well as back into the loin, yet not without dragging on the liver.

For differential diagnosis note the following points :—

(1,) Enlarged gall bladder, as well as the kidney, is a frequent cause of abdominal tumour.

(2,) Presence or absence of a history of jaundice.

(3,) The tumour caused by an enlarged gall bladder can be felt in almost all cases, whereas that of a movable kidney (unless also enlarged) cannot always be detected.

(4,) The fact that the tumour varies in size from time to time goes for nothing in the diagnosis, unless it is clear that with the diminution of the swelling there invariably follows a marked increase in the quantity of urine voided. A distended gall bladder also will vary in size if the cystic duct be blocked by a calculus which from time to time slips back into the gall bladder, and thus opens the channel for the escape of the pent up bile and mucus.

(5,) A gall bladder with calculi feels much harder than a movable kidney.

(6,) However free the movements of a gall bladder, they take place in the arc of a circle, the centre of which is a point beneath the edge of the right lobe of the liver. Around this point the free or lower extremity can be moved to the left and to the right of a vertical line drawn through the axis of the swelling, and further in the direction towards the left than towards the right. It can be pushed upwards, and it can be pushed backwards; but unless the liver as a whole is unduly mobile, the gall bladder cannot be pushed downwards towards the pelvis, though it descends a little on deep inspiration.

The kidney, on the other hand, moves bodily from place to place, within the limits of its loose connections; it will go up or down or inwards towards the median line or beyond it, and it has an especial tendency to slip, like a greasy mass, beneath the finger tips, upwards and backwards, into its normal position, unless prevented from doing so by the pressure of the other hand on the abdominal wall above it. The kidney, in other words, has a tendency to spring back into its proper position in the loin; whereas the enlarged gall bladder, though it can in many cases be pushed so far back into the loin, that its free end can be readily felt in the ilio-costal space behind, has the tendency to spring back to its position in the front of the abdomen.

Aspiration of the swelling has sometimes been proposed as a means of diagnosis; but, apart from the danger attaching to the procedure (unless the tumour is adherent to the parietes) there is the further objection that the character of the fluid withdrawn may afford no assistance at all.

In many cases the contents of a distended gall bladder are of a dropsical nature, very like the fluid of a hydatid cyst; in other cases it is glairy mucus, quite unstained by bile; and in others again it is pus. In the doubtful cases an exploratory incision is the only means of positively deciding the diagnosis, and as this is quite free from risk it should be early resorted to, with the full confidence that if the tumour be an enlarged gall bladder the earlier it is dealt with by operation the better for the patient; and that if it be a movable kidney nephrorrhaphy will relieve the symptoms and prevent hydronephrotic changes, which shortly destroy the kidney.

The Surgical Treatment of Surgical Kidney.—Dr. F. Weir[4] records a case of successful extirpation of a kidney for rapidly developing suppurative pyelo-nephritis following gonorrhœal cystitis.

The author then inquires in how large a proportion of cases can such a fortunate limitation to one kidney be expected to be met with, in serious suppurative disease; and answers it by showing that out of

seventy-one well-defined undoubted acute cases of surgical kidney, the reports of which he had been able to collect from literature, one organ only had been affected in twelve cases, that is to say, in about 20 per cent. of the whole number. He concludes, therefore, that it is justifiable, if the patient's general condition shall warrant it, in a case of acute septic invasion of the kidneys, to make on one or both sides an exploratory incision, not only in the hope of relieving the acute interstitial invasion, but also of perhaps encountering a larger and well-defined focus of pus, which pathological condition cannot always be readily discriminated from the more dangerous lesions of the veritable surgical kidney. Should the symptoms point to one kidney only, or should a double exploratory incision show the same result, a nephrectomy may with some hope be resorted to.

Tuberculosis of Kidney.—Facklam[5] collected one hundred and eight cases of tuberculosis of the kidney, in twenty of which nephrotomy was performed and in the remainder nephrectomy. Thirty-eight cases out of seventy-two were diagnosed correctly before operation. The following conclusions are drawn from a study of the operations and their results. The mortality attending the operation of twenty nephrotomies is about 60 per cent. Of the eight patients who recovered, four only are claimed as cures. This is well established in but a single case. Five had had the disease several years previously. Two of them developed acute miliary tuberculosis immediately after the operation. One died of uræmia, one died of acute septicæmia, and in the remainder the disease was far advanced or had involved other organs beside the kidney.

From the evidence the author concludes: "Thus far the results of nephrotomies, in cases of renal tuberculosis, are not favourable."

In sixteen additional cases in which nephrotomy had been performed without improving the patient's condition, nephrectomy was done, resulting, in ten of them, in very marked improvement.

Nephrectomy was performed in eighty-eight cases, with a mortality of twenty-eight per cent. In thirteen the operation was performed through an abdominal incision, with four deaths (about 30 per cent mortality). In seventy-five the operation was extraperitoneal, twenty-one deaths resulting (or about 28 per cent. mortality); but of these latter, sixteen can be said not to have died as a direct result of the operation, whereas the four deaths resulting from the abdominal operation were all due to shock, immediately following the operation.

Of the cases which recovered from the operation, sixty-two (or 70 per cent.) are reported as wholly cured or greatly relieved, but of these only fourteen had been under observation for over one year

after the operation. Of these fourteen cases, five are entirely cured, so far as can be seen; the rest are not wholly free from evidence of the disease.

Vigneron's statistics correspond very closely with those of Facklam. He is opposed to early surgical interference in renal tuberculosis. Nephrotomy gives relief in many cases, and exceptionally accomplishes radical cure. This operation is indicated when the patient is suffering, and is losing ground, and when both kidneys are affected. It is essential freely to open all pus-cavities, and to remove so far as possible all cheesy masses, to drain freely, and to suture the edges of the renal wound to the lumbar incision, so as to allow the interior of the kidney to be easily cleansed and dressed. If these steps are not taken the operation is useless.

The mortality in abdominal nephrectomies he gives as very nearly 27 per cent. In lumbar nephrectomies between 35 and 40 per cent. He advises secondary rather than primary nephrectomy, since this operation shows a decided decrease in mortality. The best time to choose is a few weeks after nephrotomy, as soon as the patient's general condition has improved. Nephrectomy should be considered only in those cases in which the disease is unilateral. Renal palpation and the cystoscope will in most cases make a decision perfectly possible.

The collator agrees with Facklam and Vigneron that nephrotomy for the arrest of renal tuberculosis of the diffuse type is unfavourable. That it will be called for imperatively in cases of localised tubercular abscess of kidney is certain; and that washing out the sac or sacs, affords, if the other kidney be unaffected, the greatest possible relief to the bladder distress and pain, besides removing a grave source of constitutional depression and infection.

Surgical interference in tuberculous disease of the kidneys has been recommended: (1,) To clear up diagnosis and remove possible stone; (2,) Free sloughing portions of the renal substance; (3,) To drain the renal pelvis and avoid the infection of the lower urinary passages by diverting the stream of tuberculous urine by the loin; (4,) Splitting the capsule to avoid extensive sloughing in cases where the onset is sudden, and large portions of the organ are threatened; and (5,) nephrectomy, in cases where the kidney is sufficiently disorganised by 'strumous' disease to be no longer useful as an excretory organ and to threaten health.

The researches of Morris, Dickinson and Steinthal, embracing one hundred and thirty four cases in all, show that in a very little more than 50 per cent., both kidneys are diseased, though not to the same

extent. This is sufficient to warn against any serious interference with the diseased organ except in cases of urgent necessity, and gives point to the remark of Morris, that "it is in scrofulous kidney especially that we so much need the means of ascertaining the working capacity of the second kidney, and it is in these cases also that the difficulty of so doing is almost insuperable."

Where the symptoms of stone were fairly clear, an operation for its removal seems to be justifiable, but the danger of lighting up a chronic into an acute renal tuberculosis is too great to justify an operation for the purpose of clearing up a doubtful diagnosis when intelligent watching and patient waiting will surely, in the great majority of cases, solve the problem.

To remove a stone, to open an abscess that is not adequately draining by the ureter, and thus relieve fever and wasting suppuration; to free sloughing portions of the kidney and thus prevent infection of the pelvis and peri-renal tissues, and when the adequacy of the opposite kidney can be reasonably ascertained to remove the one that is disorganised and causing wasting by suppuration, seem to be plain surgical duties; but to remove, or even incise and drain any portion of a kidney with the object of removing a focus likely to infect the body, is not, in Bryson's opinion, a justifiable proceeding.

The inadvisability of instrumental interference with tuberculous patients was insisted upon by Dr. Chismore, particularly as regards washing out the bladder in cases where one of the chief symptoms is frequent micturition. This is apt to be followed by a serious explosion of the disease.

Hurry Fenwick[6] has repeatedly drawn attention to the dangers of instrumental interference in pronounced urinary tuberculosis, and has recorded cases in which even washing out the bladder for cystoscopy has done irreparable harm to the kidney.

REFERENCES.—[1] "Virchow's Archiv.," Aug. 5, 1895; [2] "Annals of Surgery," Aug., 1895; [3] "Brit. Med. Journ.," Feb. 2, 1895; [4] "New York Med. Record," Sep. 15, 1894; [5] "Therap. Gaz.," April 15, 1895; [6] "Cardinal Symptoms of Urinary Disease," pp. 108, 199, also Clinical Lecture, "Mimicries of Urinary Tuberculosis," "Brit. Med. Journ.," May, 1892, p. 1,125.

LABOUR (Induction of Premature).

Theophilus Parvin, M.D., Philadelphia.

The following method is recommended by Richard Braun, for the induction of premature labour, and in cases of incomplete abortion with rigid cervix.

After thorough disinfection of the vagina, a piece of aseptic rubber

tubing is stretched over a sound, and is thus passed through the os internum. The sound is then slipped out, and the tube is left *in situ* for twenty-four hours, when it is replaced by one of larger size.

In two or three days the cervical canal is considerably dilated without pain to the patient, and with no risk from the retention of secretions, as when an ordinary tent is used. Moreover, the flexible tube adapts itself to the shape of the canal, and a flexed uterus is not forcibly straightened.

Braun claims that he has used this method in a number of cases and each time successfully.

Theilhaber contributes a method for the induction of premature labour by the introduction of **Glycerine** into the uterus, which he considers an improved modification of the method introduced by Pelzer in 1892, which he, like Pfannenstiel, condemns as dangerous.

He advises glycerine bougies as the simplest and least harmful method of applying glycerine to the endometrium. These are rounded thin bougies of fish bone, covered with a thin layer of 1 per cent. of sublimate collodion. Over this is a mixture of 5·9 per cent. of glycerine and gelatine, which, to prevent moulding, is mixed with 2 per cent. tricresol. The bougies are packed in waxed paper, that is, paper smeared inside with 3 per cent. trikresol vaseline.

Kufferath, of Brussells, stated at the Bordeaux Congress that for the induction of premature labour, he employs detachment of the membranes by injecting sterilized water, or water containing boric acid, into the lower segment of the uterus. Care is taken to prevent the introduction of air. The pressure is low, the reservoir being raised only fifty centimèters, and the introduction of the fluid is made only after thorough disinfection of the genitals. He has used this method in fifteen cases; the labour comes on in five or six hours.

Of course, this is the revival of an old method, having been first employed by Schweighäuser in 1825. The chief objection to it is the possible occurrence of air embolism, an accident that has happened in some cases; nevertheless, this accident may be averted.

LARYNGITIS.

Synopsis.—(Vol. 1895, pp. 28, 35, 51 and 353.) If hyperæmia and much expectoration exist weak astringent sprays may cure; **Iron Perchloride**, 3 to 8 grs. to ounce of distilled water, or **Chloride of Zinc**, 2 to 5 grs. to the ounce, are best. If case is chronic, with much hyperplasia, strong astringent paints are indicated, such as **Perchloride of Iron**, ʒss—2 to ʒj, applied twice a week for six weeks or more, the voice being kept at rest. If attacks of fresh cold are frequent, **Steam Inhalations** often repeated are good, but must not be too long maintained. **Vapor Pini Sylvestris** and

the Vapor Cubebæ of the Throat Hospital Pharmacopœia, are best. A mixture of Ethyl Iodide and Terebene, equal parts, is useful for inhalation in sub-acute and chronic cases. Capsules containing Myrrholine, 3 grains, and Creasote, 4½ to 5 grains, act well in tubercular forms. ℞ Ac. Sulphanilic Pur., 10 grms.; Sodii Bicarb., 8·0 grms.; Aq. dest., 200·0 grms; M. Ft. sol. *Sig.*—40 to 80 grammes daily, either at once or in two doses, in acute cases.

LARYNGISMUS STRIDULUS.

Synopsis.—(Vol. 1895, p. 30.) Grindelia Robusta is recommended.

LARYNX (Benign New Growths of the).

P. Watson Williams, M.D., Bristol.

"Singers'" or "teachers'" nodes (chorditis tuberosa), so frequently impair the voice of School Board teachers and others who habitually overstrain the vocal organs, as to merit more than passing notice. These small white or yellowish-white nodules, varying in size from a millet seed to a mustard seed, and occurring either in one or both cords, are usually found in singers, whence the name. Knight[1] points out that the name chorditis tuberosa is unfortunate, as they are often not associated with any chorditis. Kanthach examined three specimens, and found in one a simple local hyperplasia; in the second, cornification; and in the third, such a growth as comes from chronic irritation—no glands or vestiges of such were found. Several other observers corroborate Kanthach's statements. Knight differentiates between the single singer's node, on the edge of a cord, and the diffuse and multiple nodes extending to the surface of the cord, which is more correctly comprehended in the term employed by Türck, trachoma of the vocal cords. Hodgkinson[2] affirms that two factors—a swollen condition of the cords, and excessive use of the voice—are essential to the production of "teachers'" nodes. The attrition point on the edges of the cords is shown, even before the formation of the node is indicated, by a pure white spot, seen during phonation, caused by the churning up of the mucus to froth. This "froth spot" may be taken as an indication of the probable formation of a nodule, unless precautions are taken. Milligan[3] finds that the lesions prone to occur amongst School Board teachers are: (1,) Sub-acute and chronic laryngeal catarrh affecting mainly the true vocal cords; (2,) Chronic catarrhal laryngitis with a varicose condition of the smaller vessels of the true cords; (3,) Chronic catarrhal laryngitis with a varicose condition of the smaller vessels of the true cords; (4,) Chronic catarrhal laryngitis with secondary pachydermic changes, local or generalised. *These various stages may pass almost insensibly from the one to the other, so that when the stage*

of actual node formation is reached, we must recollect that it is in reality the outcome of a gradually progressive series of pathological changes.

TREATMENT.—Milligan insists on the importance of physiological rest, which unfortunately means a prolonged rest. In early cases, a short period of vocal rest, combined with local application of weak mineral astringents and the cautious use of **Steam Inhalation,** will often produce beneficial results. He has also seen much good attend the nightly application of **Leiter's Coil,** applied over the larynx for from half an hour to an hour at a time. In cases where paretic conditions of the laryngeal muscles exist, and after any superficial inflammatory condition has been got rid of, the daily application of the **Continuous Current** will be found most effectual. In those cases where the nodes are of such a size as to enable one to use crush forceps or a fine snare, Milligan states that no better method of treatment can be adopted; but these are the exception.

Knight relies on rest and astringents, and if the node did not disappear, and there was still no useful voice, he would not hesitate to use Rice's guillotine. Gleitsmann has used the galvano-cautery with good results, and also advocates **Chromic** and **Trichloracetic Acid;** Langmaid prefers to use forceps; Murray has always resorted with excellent result to touching the node with **Nitrate of Silver** fused on a silver laryngeal probe; Wright endorses this method; French relies on rest and the local application of astringents continued over a long period. N. C. Haring[4] states that in early cases, before a node has actually formed, in addition to rest, the patient should be instructed always to keep the head up when speaking, so as to give full play to the crico-thyroid muscle. Avoidance of sudden changes of temperature is to be enjoined on the patient, and catarrhal conditions of the larynx should be appropriately treated. If a node is present, the larynx should be cocainised and the node touched with chromic acid fused on a laryngeal probe. This should be repeated once or twice a week for a few weeks.

Pachydermia diffusa laryngis.[5]—While both pachydermia verrucosa and diffusa are characterised by an increase of the superficial, and the formation of an epidermoidal epithelium, the process in the diffuse form differs from that in the circumscribed in so far that it is accompanied by an increase of the sub-epithelial connective tissue, alterations which occur not only in the vocal cords but also on the ventricular bands and inter-arytenoid folds. In addition to the

thickening of the epithelium and sub-epithelial connective tissue, papillæ are formed, but the epithelial papillæ always show the typical layers of epithelium ; this fact, Fraenkel points out, is important as distinguishing pachydermia from epithelioma ; moreover, in the thickened sub-epithelial connective tissue inflammatory round cells are observed.

The chief etiological factors are alcoholism, tobacco abuse, syphilis, tuberculosis, carcinoma, and simple inflammatory processes generally, while some cases are idiopathic. Chiari treats the lighter forms by painting with weak solutions of nitrate of silver or **Iodoglycerine,** more distinct thickenings of the inter-arytenoid fold with solid **Nitrate of Silver.** Fraenkel has found rest and the prolonged exhibition of small doses of **Potassium Iodide** of service in typical forms. In obstinate cases it may be necessary to resort to caustics, the galvano-cautery, electrolysis or cutting instruments. Chiari recommends removal in the cases due to syphilis.

Chiari points out that as very diverse conditions are described as pachydermia diffusa, having in common that they are due to chronic irritation, and are accompanied by thickening of the epithelium and sub-epithelial connective tissue, the term should not be used as a clinical diagnosis of a disease, but only as descriptive of a symptom, the clinical characteristic of which is the picture of the thickenings over the vocal processes and inter-arytenoid fold.

Chronic hypertrophic laryngitis (sub-chordal) is discussed by Sokolowski, who states that he did not identify it with Stoerk's blennorrhœa ; it gradually occurred in patients with a history of typhus fever, and it was essentially a sclerosing chronic hypertrophic inflammation. He considered that the proper treatment was laryngofissure, with excision of the thickened tissues.

Fibroma.—Chiari, in a paper read before the International Congress at Rome, states that microscopical examination shows that these growths are inflammatory in origin, and not true neoplasms. They are frequently œdematous, and may contain hæmorrhagic extravasations. J. M. Booth[6] relates and illustrates a case of fibroma attached by a broad pedicle to the anterior fourth of the free border of the left vocal cord, and lying below the glottis. It was removed after performing thyrotomy, the external opening being enlarged by a transverse incision in the right ala of the thyroid cartilage, a method which Booth considers presents the great advantage over that of prolonging the incision upwards and downwards, as is usually done, by decreasing the risk of loss of voice.

The rate of growth of these neoplasms is well shown by his drawings (*Figs.* 29, 30, 31 and 32), which are reproduced by the author's kind permission.

Fig. 29.—July, 1893.

Fig. 30.—Oct, 1893.

Fig. 31.—Dec., 1895.

Adenoma.—John Wright[7] remarks that the cases of multiple adenomatous growths of the larynx reported by Marsh,[8] Wolfenden and Martin,[9] Gottstein,[10] and himself,[11] taken in conjunction with B. Fraenkel's demonstration of lymph nodes in the normal larynx, render it probable that many of the common cases of so-called laryngeal papillomatous tumours would prove on microscopical examination to be something besides "papillary fibromata."

Fig. 32.
Transverse Incision in Thyroid Cartilage.

Myxoma.—A rare case of diffuse subglottic myxoma is reported by C. H. Knight.[12] Myxoma of the larynx is generally pedunculated and attached to one of the vocal cords.

Apparently Benign Growths becoming malignant.—Wolfenden[13] records a case (male, aged forty-eight) which in the autumn of 1892 presented a pinkish-grey growth in the right vocal cord, the movements of the cord being perfect. It was removed but recurred in Dec., 1892, at the anterior end of the right cord, and in the anterior commissure, all of which was removed. During 1893 there were several recurrences. In every case of removal, microscopical sections of the growth revealed no evidence of anything but simple and typical papilloma. The patient's health was good. In May and June, 1894, the growth had developed more upon the under surface of the cord; this subglottic growth then showed histologically a distinct and suspicious tendency of the epithelial elements to dip into the stroma of the growth. There was nothing characteristic of epithelioma in its structure, but the vocal cord movements had now become obviously impaired, a symptom of malignancy to which Semon has drawn attention. In Oct., 1894, the growth had considerably developed, and, in the meanwhile, a little apparent papilloma had appeared on the ven-

tricular band, and four small papillomata on the left ventricular band. On Oct. 17, 1894, laryngo-fissure was performed, and the growth removed. The little pre-thyroid gland was distinctly cancerous. After the thorough removal (microscopical examination then left no doubt as to its epitheliomatous nature) the right-sided growth had not recurred in Jan., 1895, but the left-sided papillomata had recurred.

REFERENCES.—[1]"New York Med. Journ.," Dec. 1, 1894; [2]"Brit. Med. Journ.," Nov. 2, 1895; [3]Ibid.; [4]"Med. Chron.," Feb., 1895; [5]Moritz' Extract of B. Fraenkel's monograph and O. Chiari's paper, "Arch. f. Lar. u. Rhin," vol. ii., 1894; in "Med. Chron.," Mar., 1895; [6]"Brit. Med. Journ.," Apr. 27, 1895; [7]"New York Med. Journ," Feb., 1895; [8]"Journ. of Laryngol.," Aug., 1894, p. 504; [9]"Studies on Pathological Anatomy"; [10]"Dis. of the Larynx"; [11]"Journ. of the Amer. Med. Ass.," Sep. 26, 1891; [12]"New York Med. Journ.," Dec., 1894; [13]"Journ. of Laryngol.," March, 1895.

LARYNX (Diseases of the). *P. Watson Williams, M.D., Bristol.*

Laryngeal Lesions in Enteric Fever.—I have recently[1] placed on record notes of five cases of enteric fever from a single source, mainly in order to draw attention to and explain the communicability of typhoid fever by the breath. The first case, E. S., aged twenty, admitted to the Bristol Royal Infirmary, Ward V., with typical enteric fever; after improving, suffered from a relapse, which ended in death. During the relapse he had a discharge of pus from the right ear, and developed acute laryngeal symptoms with dyspnœa, and, post-mortem, the larynx showed extensive ulceration. The second case was that of a nurse, who had been looking after E. S., and attending him during the time he was suffering from the marked laryngeal symptoms, and, in his delirium, coughing and expectorating about the bed.

The most interesting and important case, from a clinical and pathological standpoint, was the third, J. V., aged thirty-eight, in Ward VI., who had been in the Institution for four months on account of an aneurism of the aortic arch. He had been in the habit of going to see another patient near E. S. in Ward V., and this is the only possible way he could have contracted enteric fever, since, there had been no cases of the kind in his own ward. At the post-mortem examination the larynx was found to be ulcerated on the posterior third of both cords, and on the anterior surface of each arytenoid cartilage. Moreover, by inoculation of agar tubes from laryngeal ulcers by sterilized platinum points, colonies of the Eberth-Gaffky bacillus were obtained for me by Mr. W. Stoddart, who recognized the specific character of these micro-organisms: (*a*,) By their appearance. They were numerous, very short, rod-shaped micro-organisms,

which are so short in proportion to their breadth that they almost resembled micro-cocci under low powers; (*b*,) By the naked eye appearance of the plate culture, and the abundant surface growth in the stab-culture, without liquefaction; (*c*,) They did not liberate carbonic acid when grown in glucose broth; (*d*,) They grew in phenol broth, containing 1 per cent. phenol, and 1·5 per cent. hydrochloric acid; (*e*,) They were also obtained in pure culture from the typical enteric spleen of this case.

I believe that this is the first case in which the specific character of typhoid ulceration of the larynx has been demonstrated by the isolation and cultivation of the Eberth-Gaffky bacillus, although Klebs, Rokitansky, Landgraf and Morell Mackenzie have maintained that these ulcers were specific lesions.

L. Lucatello[2], in a contribution to the pathogenesis of the laryngeal lesions in "typhoid," finds that they are noted as catarrh, erosions, infiltrations, ulcerations, diphtheritis, perichondritis, and paralysis. The experimental researches described show that the morbid processes are exclusively attributable to the specific microbe of typhoid. The consequent destruction of the mucous membrane resembles that due to other micro-organisms, the pyogenic varieties among others, and so abscesses are formed between the perichondrium and the cartilage, which are doubtless ascribable to secondary infection.

The cases I have recorded, and the researches of Lucatello, would seem to explain the possibility of typhoid fever being infectious, as maintained by Budd, and brings home to us the necessity for more careful prophylaxis in cases exhibiting laryngeal complications.

REFERENCES.—[1] "Brit. Med. Journ.," Dec., 1894; [2] "Amer. Journ. of Med. Sciences," Jan., 1895, p. 93.

Malignant New Growths of the Larynx.

P. Watson Williams, M.D., Bristol.

A few years back, very few indeed, the diagnosis of laryngeal cancer was mainly of interest from the fact that it excluded those forms of disease in which active therapeutical measures were more or less successful in curing the patient, but malignant disease in this region was nearly always hopeless, and its diagnosis a sentence of death. Now matters are very different, thanks to the brilliant achievements of laryngological surgeons. In fact, our present position is an outcome of the collective investigation of cases of laryngeal growth by Felix Semon, his research proving that non-malignant growths do not show any increased tendency to malignancy as the result of operative interference, thus proving that laryngeal operations might be undertaken freely without any *arrière pensée* as to the possibility of such interfer-

ence ending in greater disaster to the patient. In the main, however, it is due to the application of broad-minded, general surgical principles in removing malignant growths from the larynx.

Diagnosis.—It is the comparatively great success of radical surgical treatment of laryngeal cancer that renders it so essential that the early manifestations of the disease should be duly appreciated, for, when little or nothing could be done, it was time enough to make a true diagnosis when the disease was already advanced.

Again, it is to Semon that we are especially indebted for the import of certain early symptoms of malignancy. These are :—

(a,) In intrinsic cases hoarseness is nearly always the earliest and most constant symptom. Its degree, even when in the earliest stages, when only a small tumefaction or projection from the vocal cord is to be seen, is altogether out of proportion to the size of the neoplasm. Semon points out that this is due to the infiltrating character of malignant growths, which greatly impairs the mobility of the cords. With the advancing disease the hoarseness is changed to complete aphonia.

(b,) Pain is often absent till late in the disease, or even to the end. On the other hand it is often an early symptom. Absence of pain is especially frequent in the intrinsic cases, viz., those suitable for radical treatment.

(c,) Malignant disease of the larynx in its commencement may appear on the vocal cords as a unilateral congestion, or as a diffuse infiltrating growth with a red, uneven surface, or as a white, or greyish white, or reddish, warty outgrowth. It is generally broad-based, and very rarely pedunculated. Or it may arise as an uneven fringe-like outgrowth on the cords. In other parts of the larynx it may arise either as a definite growth or as a deep greyish pink infiltration.

The more characteristic symptoms and signs of malignant disease are described in text books. I have merely drawn attention to a few of the danger signals of early manifestations which are not usually associated in our minds with the possibility of such a disease as cancer.

TREATMENT.—Of palliative treatment nothing need be said, since nothing new has been added to our resources. The results of radical operation show, on the other hand, an advance which is a matter for congratulation. Semon[1] records the results of his personal experience in one hundred and three cases in private practice, the majority of cases being squamous-celled epitheliomata. Altogether he had advised radical operation (from May, 1886, up to November, 1894) in sixteen of these cases. In four of these, however, his opinion had

only been asked as a consultant, and he therefore does not include them in the present record of operations, although so far as he knew the result was successful in two of the four.

He goes on to say that he has felt his way very cautiously, and it was only in one case that he deviated from his universal rule, viz., to limit radical operation to cases of purely "intrinsic" malignant disease; in that case the chances appeared so excellent, owing to easy accessibility, the small size, and the pedunculated nature of the new growth. In all the remaining eleven cases, however, the disease was strictly limited to the confines of the larynx proper.

Up to May, 1886, Semon never recommended radical operations for laryngeal cancer, the results of thyrotomy and removal of the growth alone having been so unfavourable in other hands. After that date he observed eighty-one of the one hundred and three cases referred to. These eighty-one are subdivided into forty-four cases of "intrinsic," thirty-one of "extrinsic," and six cases of "mixed" malignant disease. Including the one extrinsic case above referred to, he would have recommended radical operations in fifteen only out of the forty-four "intrinsic" cases. From these he subtracts one in which, while only desiring to remove for microscopical examination a piece of a suspicious warty growth from the vocal cord of the patient, he succeeded in removing the whole of what proved to be a most typical cornifying epithelioma which did not recur. Thus, of forty-three cases of intrinsic disease a radical operation was recommended in fifteen only, giving roughly a proportion of two to six, *i.e.*, a small minority only in which he deemed radical operation advisable.

Indications for Radical Operation.—Semon's reasons for thus either advising against radical operation, or only holding it out as a possibility to be thought of, were of various kinds. In a number of cases the disease, though still confined to the interior of the larynx, was of a very extensive character, and would in all probability have necessitated very serious operations, amounting in a good many instances to total extirpation of the larynx. In other cases the age of the patients was too advanced to justify the performance of a big operation. Again, in other cases there was either long-standing pulmonary, bronchial, or organic heart disease, or the general health had been shattered from other reasons, conditions which seriously militate against the performance of a major operation in the upper air passages. In the two cases in which, in spite of the objections just named, the operation was decided upon, the result was disastrous. Semon has never advised radical operation in cases in which the originally intrinsic disease had either passed beyond the confines of the larynx

proper, or in which it was primarily situated on the posterior surface of the cricoid cartilage, or in which affection of the cervical glands was already present. His reasons for not doing so were and are, that in these cases not only must the operation be of a very extensive and most serious character, necessitating often not only the removal of the whole larynx, but also of a considerable portion of the upper part of the œsophagus, and furthermore it has under such circumstances often been found impossible to complete the operation owing to the implication of the large vessels and nerves of the neck in the disease, and, finally, because even if the patient recovers from its immediate effects, speedy recurrence is unfortunately too likely to take place. Semon affirms his conviction that the aim of all surgeons ought to be to perform radical operation at such an early stage of the disease that the operation can be limited to the performance of mere thyrotomy with removal of soft tissues only.

Bryson Delavan[2] summarises the indications for the radical operation as follows:—

(a,) As far as the growth is concerned: (1,) A growth of undoubted malignancy; (2,) Located within the larynx; (3,) Favourably situated for complete removal with the minimum of injury to the surrounding parts; and (4,) With the best outlook as to the possibility of non-recurrence.

(b,) Concerning the patient the indications are: (1,) That he should not be too old; (2,) That he should be possessed of good vitality; (3,) That he should suffer from no physical defect likely to complicate recovery or seriously annoy him afterwards; (4,) That he be of a cheerful, courageous temperament; (5,) That his intelligence be fair and his surroundings such as to make it possible for him to exist with moderate comfort after operation.

H. Butlin,[3] on the other hand, states that he cannot agree with Bryson Delavan's proposition that the indications for treatment of malignant disease of the larynx are "the prompt recognition of a malignant neoplasm of a given type, impossible of treatment by other methods, situated favourably for radical extirpation in a suitable patient." This proposition, and the whole tone of his paper, was opposed to his (Butlin's) views, in the cautions observed in advocating the radical treatment. Butlin expresses it as his opinion that every malignant growth of the larynx of intrinsic origin which can be dealt with should be treated by a radical operation in the absence of a decided indication to the contrary, and the operation should be performed with the least possible delay. And he further lays down a second proposition to the effect that every tumour of the larynx sus-

pected to be malignant, of intrinsic origin, of limited extent, and apparently within reach of free removal, justifies an exploratory thyrotomy in a suitable patient in the absence of evidence of infiltration of surrounding structures and of affection of the lympthatic glands.

Out of twelve cases in which radical operations were performed by Semon the method was as follows :—

	Cases.	Recoveries.	Deaths.
Partial extirpation of the larynx	3	1	2
Thyrotomy with resection of portions of cartilage	4	4	—
Thyrotomy with removal of soft parts only ..	4	2	2
Subhyoid pharyngotomy with removal of soft parts only	1	—	1
	—	—	—
	12	7	5

Including two cases in which the malignancy was not absolutely certain (full details are given), it will be seen that fully 58·3 per cent. of the patients were saved from an otherwise inevitable death. But even these encouraging figures do not represent the full measure of success that should have been obtained, for in two of the fatal cases death was due to preventable complications, and thus, if these had recovered, the successful result would have been 66·6 per cent. At the discussion in the British Medical Association meeting in London, Semon was able to report 62 per cent. of recoveries in all his cases up to that time.

The Operation.—Semon [4] describes his method of procedure as follows : Tracheotomy is first performed, and a Hahn's aseptic compressed sponge cannula is introduced into the trachea. Fully ten minutes should now be allowed to elapse before the larynx is opened, in order to give the sponge full time to expand and to hermetically occlude the lower air passages, so as to prevent the entry of blood when subsequently the larynx is opened and the operation in its interior is performed. Undue hurry in proceeding with the actual operation immediately after the performance of tracheotomy, whereby after the opening of the larynx blood may be allowed to enter the lower air passages, has had a good deal to do, we feel sure, with the pulmonary and bronchial complications so often encountered in this class of operations. The ten minutes being elapsed, and the front part of the thyroid cartilage meanwhile having been laid bare throughout its entire length by means of scalpel and raspatory, it is opened exactly in the middle line, bone forceps being usually necessary for this purpose, as the cartilage is almost always found ossified in patients of such an age as are those in whom these operations are performed. The sides of the cartilage ought to be held apart by retractors or by

strands of strong silk passed through the anterior parts of the lateral wings of the thyroid cartilage. At this stage it is generally necessary to protect the field of operation against mucous and saliva from above by means of a comparatively large sponge introduced through the laryngeal wound and placed in the lower pharynx. Finally, before commencing the removal of new growths, it is well to thoroughly mop the side to be operated on with a 5 per cent. solution of cocaine, in order to contract the capillaries, and to prevent parenchymatous bleeding interfering with, and unduly prolonging the operation of removal, while at the same time it may allow suspicious looking portions to remain behind. He insists on the importance of good illumination by focal forehead mirror, and the production of artificial ischæmia by cocaine. Two semicircular incisions, extending half an inch beyond the periphery of the growth, meeting at either end, are then made, cutting down to the perichondrium. The growth being then held by forceps, the whole area should be cut out by curved scissors, the points of which are firmly pressed against the inner aspect of the cartilage, the mucous membrane of which is to be removed. The entire growth, and part of the neighbouring healthy structures if necessary, having thus been removed, the base should be firmly scraped with a sharp spoon. All bleeding having been stopped, the whole of the interior of the wound is dusted with iodoform, or with iodoform and boracic acid in equal parts deodorised, and the sponge cannula is removed. The whole of the wound is then covered with cyanide gauze. The immediate removal of the tube, Butlin's plan, facilitates after treatment.

A point of considerable practical importance is emphasized by Clinton Wagner,[5] viz., that the patient should not be fully under the anæsthetic when operating without Hahn's tube, as blood and mucus are then coughed up; whereas, in deep or complete anæsthesia, the blood will collect, and death on the table from sudden asphyxia may take place.

After Treatment.—Following the modified plan of Butlin in this respect, Semon proceeds as follows: The patient is placed in a horizontal position on his side, that side being lowermost which corresponds to the side of the larynx operated upon, one pillow only being allowed. The tendency of secretions to pass down the trachea is thus greatly diminished. The wound is frequently dusted with iodoform and boracic acid powder. Finally, he adds some very important directions with regard to feeding.

REFERENCES.—[1] "Lancet," Dec. 15, 1894; [2] Loc. cit.; [3] Loc. cit; [4] "Lancet," Dec. 29, 1895; [5] "New York Med. Rec.," Jan. 4, 1896.

Neuroses of the Larynx. *P. Watson Williams, M.D., Bristol.*

Cortical Centres for Vocal Cord Movements.—One event of the year in laryngology is the discovery and localisation of the abductor centre in the cortex, by Risien Russell. Hitherto such a centre has never been demonstrated except in the cat, by Horsley and Semon. In the dog and monkey these observers failed to find any cortical centre for abduction, though they had found an area in the internal capsule stimulation of which induced abduction of the cords. Their failure is explained by Risien Russell, for he found that it was only after adduction of the cords had been eliminated by section of the adductor nerve fibres in the recurrent laryngeal nerves, that stimulation of the abductor centre caused abduction, the fact being that the adductors are so powerful that in most animals stimulation of the closely-situated abductor centre resulted in the abductors being overpowered, adduction alone resulting.

The particular localisation of this centre, for abduction in the dog, is in the anterior composite gyrus just in front of and a little below Krause's focus for adduction, and therefore a little in front of and below the anterior extremity of the coronal sulcus. It was sometimes more easily obtained from the Prorean gyrus just in front of the point on the anterior composite gyrus; but the two parts are quite close to each other, and simply separated by the supra-orbital sulcus. In man it may be placed a little below and in front of the spot given as the adductor centre by Gowers, in his work on diseases of the nervous system.

Russell found that stimulation of the centre of either side produced *bilateral* abduction, just as stimulation of one adductor centre always gives rise to *bilateral* adduction. Thus it is that no unilateral cortical lesion ever results in vocal cord paralysis, while on the other hand "hysterical" paralyses, when they affect the vocal cords, are always bilateral.

Risien Russell's discovery demonstrates the fallacy of Cagney's[1] hypothesis that the abductors are more prone to degenerate than the adductors, because they have no cortical (trophic) representation.

It is necessary to bear in mind the essential physiological difference between the phonatory adduction of the cords and the respiratory abduction, the former being a voluntary act, the latter an involuntary organic reflex act. Thus, although destruction of both cortical centres destroys the power of voluntary phonation, it does not destroy the respiratory abduction of the cord which is dependent on the activity of the intact medullary centres.

Paralysis of the Larynx.—Semon[2] records a case of abductor

paresis of the right vocal cord in association with right hemiplegia and paralysis of the right half of the soft palate, in a girl, aged nineteen, following a fright.

The argument is advanced that the laryngeal paralysis must be bulbar. He calls attention to a very similar case recorded by Delavan in 1884, which, four years later, was proved by the autopsy to be due to a localised softening in the medulla, which had destroyed the motor-nucleus of the pneumogastric.

I would be inclined to say that Risien Russell's discovery would tend to show that a bilateral cortical abductor paralysis of functional origin is conceivable, but that when the lesion is organic, it must be bulbar unless each cortical centre is implicated. A case of paralysis of the adductor, said to be at variance with Semon's law, is recorded by Angiéras.[3] A clerk, aged forty-nine, showed on examination free movement of the right cord, while the left remained immobile in the position of extreme abduction, both during inspiration and phonation, the free edge being slightly concave. Sensation was not affected, but the patient's larynx was reddened, and he had suffered over a year from sore throat, and he apparently suffered from a catarrhal condition and dyspnœa. As the dyspnœa was not due to glottic obstruction, it was probably due to catarrhal obstruction lower down; at any rate there is ample evidence that this was probably a myotonic paralysis and not a pure neurosis, and cannot be accepted as evidence against the truth of Semon's law.

REFERENCES.—[1] "Lancet," June 16, 1894; [2] "Intern. Cent. fur Laryngol.," Jr. x., No. 3; [3] "Revue Intern. de Rhinol.," 1895, V., p. 134.

LARYNX (Stenosis of).

Synopsis.—(Vol. 1895, p. 356.) In simple perichondritis Leeches externally, and Ice slowly and frequently swallowed; Sulphide of Calcium, gr. ½ doses. Œdema and abscess require use of laryngeal lancet. Intubation with O'Dwyer's tubes.

LEUCORRHŒA (Its Causes, Varieties, and Treatment).

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In a large proportion of instances the first symptom that directs the attention of patients to the most common forms of diseases peculiar to women is leucorrhœa, or, in other words, some abnormal mucoid exudation from the genital canal. Such discharges, although obviously symptomatic, are frequently so prominent a feature of these cases, or are so obscure in their causation, far-reaching in their consequences, or intractable in their management, as to occasion no small a part of the diagnostic and therapeutic troubles encountered

in this special branch of practice. It may, therefore, be not altogether useless to review briefly, from the standpoint of a somewhat extended clinical experience, our knowledge of the general pathology of leucorrhœa, the circumstances from which this originates, the results it occasionally produces, and the methods available for its treatment.

Under the term leucorrhœa, I shall here include all mucoid exudations containing elements foreign to healthy mucus that may proceed from the lining membrane of any portion of the female genital tract. These discharges are commonly classified in accordance either with their cause, or from their primary location. The latter arrangement, although open to the objection that this complaint seldom remains confined to its starting point, and that its characteristics, consequences, and treatment are influenced, not alone by its situation, but also by the special exciting cause of the discharge, and by the constitutional condition of the patient in each instance, is nevertheless probably as good as any other that can be suggested, and will be followed in the subsequent observations in the course of which the vulvar, vaginal, and uterine, forms of leucorrhœa must be separately discussed.

Mere hypersecretion of the healthy mucus of the genital canal, does not come within the scope of my remarks on leucorrhœa, although it is so included by other writers, irrespectively of any pathological condition that natural exudation may be increased by local hyperæmia consequent on ovulation or pregnancy. Moreover, its amount bears a constant relation to other circumstances, being greatest during the epochs of reproductive activity and in married life ; and, on the other hand, being smallest in quantity before the period of puberty, and again in advanced age when the vaginal rugæ become comparatively bloodless or obliterated, and the uterus and its adnexa undergo a process of senile atrophy.

I.—Vulvar Leucorrhœa.

In reference to leucorrhœal discharges from the labia, nymphæ, and adjoining parts within the vulvar area, it may be observed that not only are these mucous surfaces peculiarly exposed to the external or catarrhal, infective, and traumatic causes of local inflammation resulting in exudations, but also that the contiguous glandular structures present a fertile field for their development and extension. For instance, the vulvo-vaginal or Bartholinian glands in the deep fascia on either side of the vaginal orifice are, together with their ducts, very liable to inflammation, attended by an excessive and vitiated mucoid exudation.

The most common causes of vulvar leucorrhœa are, with one exception, especially exemplified in pediatric practice. Thus, in the Children's Hospital, Dublin, with which I have been connected for the past twenty-three years, I have had occasion, as pointed out in my recent "Handbook of Diseases of Women," to notice the frequency and importance of leucorrhœa in children of all ages from infancy up to puberty. In after life, moreover, the remote consequences of this affection are but too often encountered in gynæcological practice in not a few instances of chronic endo-metritis, stenosis of the cervix, dysmenorrhœa, sterility and flexions of the uterus, the origin of which may be traceable to neglected leucorrhœa in childhood. Nor, as has been shown by Dr. Keating of Philadelphia, and by Dr. Currier, are such results limited to the uterus, but may eventuate in lesions of the Fallopian tubes and intra-pelvic tissues. Further, those discharges may become of medico-legal as well as of therapeutic interest, as I have seen in instances where I was called on to give medical evidence in reference to charges arising from their occurrence.

Ætiology.—Of all causes of vulvar leucorrhœa one of the most important in childhood is a constitutional strumous taint, the local influence of which is as obvious in this complaint as in the chronic glandular affections of children of that diathesis. Next in frequency in the causation of such discharges at all ages, but more especially in the ill-cared children of the poor who have come before me in the extern departments of my hospitals, is the too common neglect of that attention to the cleanliness of the genitalia which is essential to their sanitary integrity. In other instances, vulvar leucorrhœa is consequent on local irritation traceable to ascarides. Still more frequently, in young and old alike, it presents a catarrhal form following exposure to cold or wet, or it may result from direct injury to the parts as well as from any other cause of vulvar inflammation, whether non-infective or specific—*i.e.*, gonorrhœal or syphilitic.

Symptoms.—Reserving the last-mentioned, or specific forms of leucorrhœa for subsequent consideration, the ordinary symptoms of pudendal inflammation, leading to mucoid discharges from the vulva, are: a sense of fulness, or discomfort in the external genitalia, together with hyperæmic tumefaction of the vulvar mucous membrane, followed by an exudation, which from the first is generally much more viscid than in the vaginal forms of the complaint. In many instances the pudendal orifice is so glued together by this discharge as to cause considerable pain and difficulty in micturition.

TREATMENT.—A primary point to be attended to throughout the treatment of vulvar leucorrhœa is to secure, as far as possible, the

asepsis of the affected surface by the frequent use of warm antiseptic lotions, such as **Boric Acid,** 1 in 25; **Izal,** 1 in 100; **Lysol,** 1 in 100; or **Corrosive Sublimate,** 1 in 2000, so as to sterilize and cleanse away the abnormal exudations, which when allowed to accumulate, are liable to become decomposed, and thus not only increase the local irritation, but also furnish a medium for the reception and development of pathogenic micro-organisms, by which the entire genital tract may be infected.

Without entering in detail on the treatment of the hyperæmic and other conditions of the vulva that may give rise to leucorrhœa, it will suffice to say that, in cases of ordinary catarrhal and simple inflammatory mucoid discharges from the lower segment of the genital tract, these exudations may, generally speaking, be arrested either by the insufflation of the vulvar mucous surface, with non-irritating, dry, antiseptic, astringent agents, such as **Loretin** and **Salol,** or by the topical employment of **Boro-glycerine,** and **Glycerine of Carbolic Acid;** or, and oftentimes no less effectually, by some of the older fashioned local astringents, such as a strong (*i.e.*, ʒij to the ʒj) solution of **Nitrate of Silver.** In the interval between these applications the parts should be kept separated by creolin gauze, saturated with dilute liquor plumbi, or hazeline, until the discharge has completely subsided. During this local treatment the patient, suffering from acute vulvar leucorrhœa, should be restricted to bed, and, after free purgation, be put on a light, nutritious dietary. Even in the chronic forms of this complaint these measures are frequently no less advisable, in conjunction with any tonic or other remedy that may be specially indicated by the existence of the strumous, chlorotic, anæmic, or other cachexiæ, which are so generally associated with chronic vulvar leucorrhœal discharges, and by which they may be produced or kept up.

II.—Vaginal Leucorrhœa.

Whilst, as already observed, leucorrhœa, if neglected, sooner or later travels far beyond its primary seat, nevertheless, in many instances this process of invasion is indefinitely protracted, and for a time at least the complaint remains localised, and evinces distinctive features consequent on the structural and physiological characteristics of its starting point. For instance, leucorrhœal discharges originating from the mucous membrane of the lower portions of the vagina are generally less viscid than those proceeding either from the vulva or from the upper part of that canal, or from the cervix. From the latter vaginal mucoid exudations further differ, not only in their acid reaction, but

also in that peculiar opalescent creamy colour to which the disease owes its popular name, "the whites." This appearance is obviously due as much to the larger proportion of albuminous constituents, both in solution and in suspended flocculi of coagulated albumin, which such secretions contain, as to the presence therein of epithelial cells and fatty *débris* with which genuine pus corpuscles and blood discs may eventually be interspersed.

On the other hand those more opaque, curdy exudations, frequently observable in the upper portion of the vagina, generally result from the admixture there of its acid secretions with the alkaline cervical discharges, and the consequent coagulation and local adhesion of their albuminous constituents. In this way the vaginal walls may become so encrusted by pseudo-membranous-looking exudations as to produce those appearances which some authorities have ascribed to croupous, or diphtheritic vaginal disease.

Ætiology of Vaginal Leucorrhœa.—The causes of this condition include all forms of local irritation to which the genital canal is liable, such as the following : (1,) catarrhal, and (2,) strumous inflammation of the vagina ; (3,) follicular vaginitis ; (4,) specific, and more especially gonorrhœal infection ; (5,) neglect of cleanliness ; (6,) irritation from worms ; (7,) vaginal tumours ; (8,) congestion resulting from uterine displacements ; (9,) mechanical injuries ; (10,) over-stimulation of the parts, as evinced in newly-married patients. Vaginal leucorrhœa may also arise ; (11,) from the extension of uterine, tubal, ovarian, or pelvic disease ; or (12,) from the genital hyperæmia attending the latter months of pregnancy ; or (13,) from the topical congestion ushering in the catamenial epochs, or consequent on the menopause. Moreover, independently of any local lesion leucorrhœal discharges may : (14,) be vicarious of menstruation ; or (15,) consequent on arrested lactation ; or (16,) due to metastasis of remote disorders ; and lastly (17,) they may be the result of constitutional debility, however occasioned, giving rise to impaired tonicity of the vaginal mucous surface, and consequent hyper-secretion therefrom.

III.—Vaginal Leucorrhœa from Inflammatory Lesions.

Although the causes of vaginal leucorrhœa are so many, as is indicated in the foregoing list, it must suffice to refer to the more important of the inflammatory, or sub-inflammatory conditions that commonly give rise to that discharge. Amongst these are : (1,) catarrhal and simple local inflammation ; (2,) infective or gonorrhœal ; (3,) strumous; and (4,) follicular vaginitis. In not a few instances, however, it will be

found practically impossible to distinguish between the former—all of which, if unchecked, may eventuate in the last-named type of the disease.

Symptoms.—Vaginal leucorrhœa, from any of these inflammatory lesions, is preceded by a sense of heat and irritation in the affected mucous surface, which at the same time is tumefied and dry, until this hyperæmia becomes relieved by exudations. On local examination the calibre of the canal will now be found diminished, owing to the congestive tumefaction of its walls, and the vaginal mucous membrane vascular in aspect, when freed from the discharge by which it is coated, and by which is overlaid the mucous follicles then probably eroded, hypertrophied, and dotted over with clusters of proliferating papillæ. This condition, which may endure for an indefinite period, is generally present in cases of long-standing vaginal leucorrhœa, and is commonly connected with some form of chronic uterine, peri-uterine, tubal, or ovarian complaint.

Diagnosis.—The differentiation of gonorrhœal from non-specific inflammatory exudations from the vaginal mucous membrane, is often a matter of much difficulty. In both instances the extending local inflammation may give rise to discharges from the mucosa of the urethra and bladder as well as from the vulvo-vaginal surface, which can only be distinguished by the recognition of the gonococci of Neisser in the former class of cases. Frequently, however, this test is not practically available; nor is it always reliable, as that gonococcus is not invariably discoverable with certainty by immediate microscopic examination, nor without cultivation; and as, moreover, Parrish and Baldy have pointed out, occasionally other micro-organisms, apparently morphologically identical with gonococci, are found which can be distinguished only by an expert. Under these circumstances, as a rule, our diagnosis must be grounded on the symptoms and history rather than on the bacteriological evidences of the complaint. It should hardly be necessary, therefore, to observe that in cases such as these, in which a patient's reputation or domestic happiness may be involved in the question referred to, our opinions cannot be too carefully considered or too cautiously expressed.

Complications.—Vaginal leucorrhœa, whatever its origin, invariably tends to extension to the contiguous mucosa, and hence urethritis, vulvitis, or cervicitis—often resulting in dysmenorrhœa and sterility—are daily observed in cases of this kind. Moreover, the specifically infective forms of vaginal exudation, frequently lead either to endo-uterine disease or to graver tubal complications, such as salpingitis

and pyosalpinx; or may eventuate in pelvic cellulitis and other inflammatory lesions of the pelvic connective and serous tissues.

TREATMENT.—In whichever of the above-described forms leucorrhœal discharges from the vaginal walls present themselves, the principles on which they should be treated are essentially similar, and in none of them can the *minima diligentia medicina* be safely acted on. The obvious therapeutic indication is the abatement of that local hyperæmia on which the exudation is consequent, and this can only be accomplished by the removal of its immediate exciting cause, and by the cleansing away or sterilisation of the discharge. With these objects, should the origin of the complaint be gonorrhœal infection, effective germicidal agents, such as 1 in 2,000 solution of **Bichloride of Mercury,** or **Creolin** (1 in 200), should be freely applied to the parts; whilst in the majority of other cases of vaginal leucorrhœa of catarrhal and inflammatory causation, all that need be locally employed in the initial stage of the complaint is the frequent and abundant use of hot water followed by weak lead lotion, dilute solution of fluid extract of **Hydrastis Canadensis,** or any other soothing vaginal irrigation.

As soon, however, as the inflammatory condition of the vaginal mucous membrane connected with the commencement of leucorrhœa has subsided, and when the exudation has become well established, the application of **Ichthyol** in the form of a 10 per cent. ointment may prove effectual in arresting vaginal discharges, and removing their exciting cause. This remedy is, however, so malodorous and dirty in its use, as to prevent its general adoption, and therefore more commonly the ordinary local astringent and antiseptic applications, such as **Boric Acid** and **Salol,** may preferably be employed with the aid of the vaginal insufflator, by which a powder consisting of equal parts of **Boric Acid** and **Alum,** or **Iron Alum,** may be introduced into the vagina daily until the discharge becomes checked. More recently I have employed in several cases vaginal insufflations of **Loretin**—which Messrs. Burroughs, Wellcome & Co. brought under my notice last year—and so far as I have been enabled to form an opinion, this agent, which possesses many of the surgical uses of iodoform, whilst devoid of its offensive odour, seems especially serviceable in the local treatment of muco-purulent and fœtid vaginal discharges. Before these insufflations, the vagina should on each occasion be flushed out with a carbolised or other antiseptic injection (temp. 110°F).

In some cases of chronic vaginal leucorrhœa, I have experienced special benefit from the use of a mixture of 1 part of **Glycerine of Carbolic Acid** with 4 parts of **Glycerine of Tannin,** applied by

means of a saturated tampon introduced through the speculum, on the removal of which the tampon should be retained for some time so as to bring the contracting vaginal walls in contact with the astringent. In one instance my assistant, by accident, saturated the cotton wool with pure **Carbolic Acid**, nor was this discovered until the vaginal surface was observed to become whitened and shrivelled up. The vagina was then washed out with an alkaline injection, and some days subsequently a complete cast of the mucous membrane was thrown off, the result being a permanent cure of the vaginitis and consequent leucorrhœa. This method of treatment, I need hardly say, is not here mentioned as one to be adopted in such instances, in few, of which will any local remedies be found necessary beyond those above recommended.

Vaginal Leucorrhœa of Pregnancy.—The physiological hyperæmia of the genital tract consequent on utero-gestation commonly gives rise to hypersecretion of vaginal mucus. This being a symptom rather than a disease of pregnancy, generally calls for nothing more than proper attention to local cleanliness. In some instances, however, the exudation is profuse and distinctly muco-purulent, giving rise to intense pruritus of the pudendum, especially in the latter months of pregnancy. This discharge may be confounded with that resulting from gonorrhœal infection, from which it must be differentiated as before described. The treatment of this affection, as Dr. Leishman observed, must necessarily be confined within certain limits, so that sometimes palliation is the most we can hope for. Cauterants or strong injections cannot be employed, lest they should induce premature labour, and even the simplest injections, must, if used, be employed with the greatest possible caution, as it is well known that repeated injections even of tepid water, will often suffice to induce uterine contractions. In my own practice in cases of this kind, I have almost always found constitutional treatment, and more especially the exhibition of **Iron** and **Quinine** or other tonics no less necessary and serviceable than that mere attention to vulvo-vaginal cleanliness, which, together with astringent lotions and suppositories, are more commonly relied on.

Leucorrhœal discharges in the last months of pregnancy are especially prone to occasion great irritation or even erosion of the external genitalia, and for the relief of such cases of pruritus, in addition to the ordinarily employed local sedatives, I would again recommend a fair trial of the **Methylene-blue Solution** which I suggested[1] as one of the best of all topical analgesics in pruritic affections of the pudendum generally.

IV.—Vaginal Leucorrhœa from Constitutional Causation.

Apart from any of the before-mentioned local sources of irritation or hyperæmia, the secretions of the vaginal and uterine mucous surfaces may be abnormally augmented and altered by various constitutional causes, as is observed in patients of strumous diathesis, in whom abundant glairy exudations from the genital mucosa are hardly less common than the similar-looking catarrhal discharges from the naso-pharyngeal surfaces and glands of scrofulous subjects. The importance of a constitutional factor in leucorrhœal cases is also apparent in females suffering from chlorosis, anæmia, and other forms of debility, in whom blennorrhagic vaginal hypersecretions that cannot be traced to any local lesion, and evidently consequent on general impairment of vascular tonicity, are so often noticed. Again, the constitutional character of leucorrhœa is proven by its occurrence as a direct consequence of arrested lactation, or as a metastasis of gouty or rheumatic disorders. Still more obvious in this connection is the amenorrhœal form of leucorrhœa in which we find the suppression of menstruation attended by more or less profuse non-hæmorrhagic discharges from the vagina and endometrium.

V.—Cervical Leucorrhœa.

General Etiology of Cervical Leucorrhœa.—These exudations consist primarily of a hypersecretion of the bland crystalline mucus, which is normally evolved from the muciparous follicles and epithelial surfaces of the rugous portion of the cervical canal. This, under pathological conditions, becomes gradually altered in character as well as in quantity, and eventuates in that viscid glutinous or bird-lime-like discharge, frequently acrid in alkalinity, which may be seen coating the gaping lips of a lacerated cervix in instances of chronic cicatricial ectropium, or extruding from the os uteri in cases of endo-cervicitis. If traced further up, that exudation will then be found, as was described by Tyler Smith, adhering to the cervical crypts and rugæ, so as to fill the canal, and consisting of mucous corpuscles, oil globules, and dentated epithelial cells, with which are also not infrequently found blood discs and pus corpuscles, enveloped in a thick transparent plasma, resembling raw white of egg, remarkable for its tenacity, alkaline in its reaction, and thus contrasting with the thin acid secretions of the vaginal mucous membrane.

Consequences of Cervical Leucorrhœa.—Under normal conditions the crystalline cervical mucus not merely acts as the natural lubricant of the canal, but moreover, serves, in the interval of the catamenia, as a block by which the entrance to the uterine cavity is guarded against

the admission of pathogenic germs, whilst being a suitable medium for the passage of spermatozoa into the uterus, as well as a seal to its orifice during pregnancy. All these functions are impaired or destroyed when that secretion becomes leucorrhœal, a condition which not only constitutes a constitutional drain, occasioning impairment of the patient's general condition, but also proves a likely focus of infective disease from the possibility of septic changes in the vitiated discharges. Moreover, these exudations, especially when their morphological elements, their viscidity, and alkalinity are most distinctly abnormal, are frequent sources of irritation and erosion of the cervix, and above all are of special interest in reference to the causation of sterility. The latter point is one of great practical and often neglected importance in connection with the treatment of barrenness. In such cases it frequently happens that operative measures to overcome supposed stenosis might be dispensed with if the circumstance, first observed by Marion Sims, that probably the most common cause of sterility is an abnormal condition of the cervical secretions, was sufficiently recognized. That effect, as he pointed out, may be produced either mechanically by the calibre of the canal being so completely filled by the unduly viscid mucus as to interpose an insuperable barrier to conception, or chemically, by its being so hyper-alkaline and acrid as to occasion the immediate destruction of the spermatozoa. This fact, I may add, has been abundantly confirmed by my own clinical experience of numerous cases in which the cure of sterility was effected by the thorough curetting of the cervical canal so as to destroy the diseased secretory surface, as well as to clear the passage from the mechanical obstacles presented by its morbid exudations.

Treatment.—In reference to the general pathology and therapeutics of the conditions leading to cervical leucorrhœa, in the old "Dublin Obstetrical Transactions," upwards of twenty years ago, I pointed out their common connection with constitutional, and more especially with strumous, diseases, and urged the consequent importance of conjoining constitutional treatment with whatever local measures may be necessary in such cases. In a more recent work[2] I again endeavoured to enforce this still neglected truth, in which, however, I have since discovered that I was anticipated by the late Dr. Tyler Smith, who was the first to show that the indications of treatment, based on a knowledge of the minute anatomy of the os and cervix uteri and the study of its pathology in leucorrhœa, prove the importance of combining constitutional medicines and regimen with local applications, which to be of any use in cervical leucorrhœa, should be applied, not to the vagina, nor to the os uteri, but to the canal of the cervix.

The latter object may, I think, be readily and effectively carried out by the employment of the curette, and for this purpose I have found **Duke's Cervical Curette** very useful in the thorough removal of that viscid discharge by which the canal is blocked in cases of cervical leucorrhœa without any risk of occasioning too deep a denudation of the walls of the passage. Before employing this or any other curette, however, I generally find it advisable to dilate the canal freely by the two-bladed dilator which I have devised for such purposes, and in my practice, immediately after curettage, the denuded endo-cervical surface is brushed over with **Iodised Phenol,** the patency of the passage being subsequently maintained by the use of **Salol Bougies.**

Such local measures should, generally speaking, as before observed, be conjoined with constitutional treatment, and more especially with those remedies specially indicated by the strumous diathesis so frequently noticeable in patients suffering from chronic leucorrhœal discharges. Without again enlarging on this point, it may be enough here to say that in the way of general treatment in the majority of these cases the physician must rely chiefly on the **Ferruginous Tonics** which, with **Mineral Acids, Quinine, Cod-liver Oil** and **Maltine,** or **Malt Preparations,** are, in conjunction with suitable hygienic and dietetic measures, his ordinary resources in strumous disorders. The only other drug which would appear to me to have anything like a commonly remedial effect in non-specific chronic leucorrhœal cases is **Arsenic** and its combinations, such as **Donovan's Solution,** from which, when administered in small and long-continued doses, I have experienced benefit in the treatment of many cases of this kind.

The length to which these observations have extended, precludes any remarks here on those endo-corporeal, fundal and tubal forms of leucorrhœa on which I have not yet touched. Enough has, however, I trust been said to show that the subject of the present article, which I recently brought before the Royal Academy of Medicine in Ireland,[3] is well deserving of fuller consideration than is generally accorded to it by modern gynæcological authorities.

REFERENCES.—[1] *Vide* "British Medical Journal," Jan. 19, 1895; [2] "Clinical Gynæcology: a Handbook of Diseases Peculiar to Women," by T. More-Madden, p. 148; [3] *Vide* "The Dublin Journal of Medical Sciences," April, 1895.

LEUKOPLAKIA. *Priestley Leech, M.D., F.R.C.S.*

TREATMENT.—Rosenberg[1] reports an obstinate case of leukoplakia, which had resisted mouth washes of resorcin, pencillings with lactic acid, application of iodoform and methylene blue, but which yielded to pencilling with a 20 per cent. solution of **Iodide of Potassium.** The

application was followed by an intense burning sensation, which ceased in about half-an-hour. The patient, by daily pencilling, can keep his tongue free from ulcers.

Leishkow[2] says that during the last three years he has obtained very good results from the use of a concentrated solution of **Resorcin** in spirit. The difficulty has always been to find a means of keeping the remedy employed in sufficiently prolonged contact with the mucous membrane. He now uses a thick paste, which dries on the part and penetrates deeply into the mucous membrane. The formula is :—

℞					
	Terræ Silicæ	grs. xxijss	Adipis	ʒj
	Resorcin	grs. xlv		

By means of small pledgets of cotton wool twisted loosely around a pointed piece of wood, this paste is applied several times a day, particularly after meals, and immediately before going to bed. In eight to fourteen days the opaline patches have shrunk, and the mucous membrane is thin and has a rosy appearance. Smoking and use of pungent condiments must still be forbidden, and a mouth wash of boric acid must be used. The hyperæmia of the patches to which resorcin has been applied can be quickly subdued by applications of balsam of Peru, by means of which a *restitutio ad integrum* is brought about.

REFERENCES.—[1] "Deut. med. Woch.," Sep. 13, 1894 ; [2] "Monatshefte für Prak. Derm.," Bd. xix., No. 7, Oct. 1, 1894, both quoted in "Therap. Gaz.," March 15, 1895, and in "Brit. Med. Journ.," Nov. 3, 1894.

LICHEN PLANUS. *Norman Walker, M.D., Ed.*

The condition represented in the drawing (*Plate X*) is one of a disease neither very common nor very rare. It is rare enough to be included in Dr. Crocker's list of those cases of which he sees rather an extra proportion ; the "necessity of the practitioner being the opportunity of the specialist."

The most outstanding feature is one which it is not possible to show accurately in this plate, viz., the colour, which once seen, is never forgotten. It is a peculiar livid lilac, which, if distinctly present, is almost enough of itself to justify the diagnosis. The plate shows an unusually discrete character, very few spots having run together into patches, but the character of the individual spots is all the clearer. These, it will be noted, are not covered by scales. On the contrary, they have—and the plate shows this wonderfully well—a peculiar burnish on the top, which is another characteristic of the disease. The spots in this case are of the round variety, and do not show that

PLATE X.

angled character caused by their being bounded by the natural lines of the skin, which they often do. The distribution too is typical. They are in the greatest numbers just above the wrist, one of their favourite seats. Another is the inner thigh above the knee; and elsewhere, where there is any constriction, as at the waist and garter regions. The disease is an obstinate one, and is one of the few skin diseases where **Arsenic** may be resorted to at once, and with a good prospect of success. Others, however, use in preference, **Antimony**, and others again pin their faith to external remedies, such as **Tar** or **Carbolic Acid** and **Sublimate** in the form of ointment.

Synopsis.—(Vol. 1895, p. 360.) **Temperate Douches** were first used by Vidal.

LICHEN URTICATUS. *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

Neebe[1] recommends the internal use of **Antipyrin**, and general treatment of the intestinal tract. Externally, 2 per cent. **β-Naphthol Ointment.**

REFERENCE.—[1] "Mon. f. prakt. Der.," vol. 20, No. 12.

LIVER (Surgery of). *A. W. Mayo Robson, F.R.C.S.*

Hepatectomy for Cancer of Liver.—In November, 1895, I removed with success a malignant tumour of the right lobe of the liver, the mass weighing half-a-pound. Recovery was complete and uninterrupted.

The operation was simplified by the use of the elastic ligature, which was prevented slipping by the insertion of two knitting needles beyond it.

It must be rare to find a case of this kind amenable to operation, but in this instance the cancer had started in the gall bladder and cystic duct, and was limited to the adjoining part of the liver, the whole of the disease being thus well within reach.

Etiology of Tropical Abscess of Liver.—Dr. John Curnow[1] relates a case of special interest, as demonstrating the causal relation between dysentery and so-called tropical abscess of the liver.

The patient had suffered from dysentery eighteen months before symptoms pointing to abscess of the liver developed, and enjoyed good health in the interim.

The abscess was opened and drained with immediate marked alleviation of symptoms, but three days later the patient had a sharp attack of dysentery, lasting about ten days, which yielded to daily irrigation of the rectum with a weak solution of quinine and the internal administration of mercury, ipecacuanha, and opium. Ultimately, the man made a complete recovery.

Microscopic examination of the pus from the abscess and the dysenteric stools revealed the presence of amœbæ coli.

Mr. Stephen Paget[2] records two interesting cases of suppurating hydatid of the liver, projecting backwards, where drainage through the chest-wall was obtained after resection of the rib.

In consequence of the diaphragm being pushed against the side of the chest-wall, this operation is easier than would at first sight appear, and in similar cases we have found no difficulty in closing the opened serous cavities by sutures. It is undoubtedly the best method of treatment for suppurating hydatid in this situation.

REFERENCES.—[1] "Lancet," May 4, 1895; [2] "Brit. Med. Journ," Nov. 2, 1895.

LOCOMOTOR ATAXIA. *Græme M. Hammond, M.D., New York.*

For the treatment of the lightning pains in this malady Blondel[1] recommends a modification of the suspension method, which he believes causes slight elongation of the cord. He considers it very efficacious in relieving many of the symptoms of ataxia. The patient is placed on his back upon the bed. The thighs are then flexed upon the abdomen so that the knees approach the chin; the legs at the same time are flexed as much as possible. A cord is passed around the neck and under the knees, thus enabling the patient to maintain this position for at least five minutes daily or nightly. This should be continued for a week, or even longer if benefit is obtained.

Bilbao[2] observed that **Senna** given for purgative purposes to a patient suffering from incontinence of urine due to tabes, greatly relieved, and eventually arrested the disagreeable symptom completely. He subsequently tried it in eleven similar cases; in five of these the trouble disappeared entirely, and in the others it was considerably diminished. (See also "Neuritis and Tabes.")

REFERENCES. — [1] "Rev. de Thérap.," April, 1895; [2] "Lancet," p. 1,299, 1894.

Synopsis.—(Vol. 1895, p. 365.) Weiss gave 8-gramme doses of **Potassium Iodide** daily with benefit (syphilitic cases). **Ergot** and **Strychnine** in small doses being used at the same time. Even 12 grammes daily of **Iodide** have been given in an old case. Lightning crises have been relieved by 50 centigrammes **Phenacetin** every half hour until 8 doses are taken, but if the stomach rebels **Phenocol** may be used subcutaneously, or **Morphia** with **Atropia**.

LUNGS (Cirrhosis of).

Synopsis.—(Vol. 1895, p. 10.) **Gold** is recommended in the form of **Liq. Auri et Arsenii Bromidi**, or the **Mercuric Bromide of Gold**, the dose of either being 10 drops.

LUPUS. *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

Morrow mentions that it is not unusual to get improvement in lupus from **Mercurial Treatment.**

Dubreuilh believes in **Scarification,** and also in the use of **Elective Caustics,** such as **Arsenic.**

Liebreich at the Berlin Med. Soc. (Feb., 1895), discussed the treatment of lupus with **Cantharidin.** All patients stood it well. Instead of subcutaneously he now gives it internally, dissolved in **Tincture of Orange.** He has never seen nephritis, unless the drug is given recklessly. He mentioned several cases where the results had been excellent.

In the discussion, several speakers differed from Liebreich as to the effect on the kidneys.

Freudenberg recommended the following prescription : **Cantharidin** ·001, **Alcohol** 1, **Water** 100 ; a teaspoonful three or four times a day.

Slocker[1] refers to the advantage of **Scarification,** in cases where a scar has to be avoided. He has also found it of considerable value in recurring eczemas of the upper lip and nose, in sycosis and in keloid, and occasionally of service in obstinate pruritus vulvæ et ani.

Abrahams[2] treated a widespread case for six months with 3 **Thyroid Tablets** daily, along with **Cod-liver Oil.** He had never seen such a successful result. (*See* "New Remedies," p. 63.)

Emerich[3] has tried **Erysipelas Serum** in the treatment of lupus. It is apparently of most value in perfectly fresh cases. It has also been used in the treatment of cancer, glanders and syphilis. **Sheep's Serum** appears to be the best.

If the surface is large Krecke treats lupus with the **Knife,** at several sittings, followed by **Thiersch's Grafting.** The same knife should not be used for excision and for making the graft. He finds that the operation can be done under local anæsthesia.

Wentscher[4] conducted experiments to determine how long skin grafts could be preserved, in salt solution. He got excellent results after fifty hours.

Kohler[5] referred to the combination of surgical and tuberculin treatment. The discussion as a whole was not favourable to the treatment.

Spannochi[6] uses **Picric Acid.** The affected part is thoroughly scraped, then dusted with picric acid. After a few days a picric ointment is substituted, 1 to 10 or 1 to 20, until complete healing results.

Thibierge says, "Lupus vulgaris gets worse, while the patient gets better, with **Sea-Bathing.**"

Venturi treated four cases with intra-muscular injections of guaiacol, without much benefit.

Scharff[7] recommends a plan which he saw used at Unna's clinic. Pointed matches were soaked in the following solution :—

℞ Sublimate	1·0	Ether		25·0
Salicylic Acid	10·0	Olive Oil		100·0

These were then bored into each individual nodule, the ends cut off with scissors and left *in situ*, and the hole covered with mercury carbolic plaster. After twenty-four hours this is removed, the part washed and the holes filled with the following powder :—

℞ Hg. Cl_2	·1	Cocain	·5
Salicylic Acid	·5	Magnes. Carb.	10

The plaster being re-applied.

Geraert[8] has found **Aristol** of use in lupus, especially combined with **Curetting**.

Moreau[9] has successfully treated lupus by **Subcutaneous Injections** of **Guaiacol** and **Thymol.**

℞ Thymol	2	Olive Oil	āā 5·0
Guaiacol (sterilised)			

Dose 1.

The injections are made twice weekly. Great caution is necessary, as severe pulmonary congestion is apt to occur.

Elsenberg[10] has tried **Para-chlorphenol** in lupus. He states that a 2 per cent. solution is more powerful than a 5 per cent. solution of phenol. He applies the pure drug and covers it with an ointment containing it. There is considerable pain, but it does not last so long as that caused by pyrogallic acid. The remedy is evidently worth a trial.

Klebs has been working further with **Tuberculin**, and has convinced himself that it is possible to cure the tubercular processes without injury to the individual. He uses purified tuberculin (tuberculocidin, erethin, antiphthisin). (Die kausale Behandlung der tuberculose.)

There is in the literature of this year very little reference to the treatment by Dr. Unna's salicylic plasters, probably because their efficiency is beyond the reach of discussion. Dr. Mansell Sympson treats his cases with **Salicylic Collodion**, 1 drachm to the ounce, with the addition of 10 minims of **Tr. Cannabis Indica**. Several drugs may be used dissolved in collodion, which has the advantage of being an exceedingly cleanly method.

In diagnosing doubtful cases of lupus, the method recommended by Unna, of dispelling the hyperæmia by pressure with a glass, through

which the yellowish brown nodules may be very distinctly seen, is one of very great value.

REFERENCES.—[1] "Chronica Medica," vol. 4, 1894; [2] "Brit. Med. Journ.," Dec., 1894; [3] "Munch. Med. Woch.," 1894, No. 28 to 31; [4] "Berl. klin. Woch.," 1894, No. 43; [5] "Berlin la Charite Soc.," Jan., 1894; [6] "Rif. Med.," No. 295; [7] "Monat. fur Prakt. Dermatol.," xxi, 6; [8] "Flandre Med.," Feb., 1895; [9] "Sem. Med.," Nov., 1893; [10] "Archiv. fur Dermat.," 28, 1.

LUPUS ERYTHEMATOSUS.

Synopsis.—(Vol. 1895, p. 367.) **Bulkley's Phosphorus Treatment.** Chicken cured a case by the method of generating nascent sulphur in the tissues by the action of **Potass. Permanganatis, Sodium Hyposulphite** and **Dilute Hydrochloric Acid.**

MALARIA (in Children). *Henry Dwight Chapin, M.D., New York.*

Dr. Ferrier[1] has used **Methyl-blue** with satisfactory results in some cases of malaria in children where quinine had failed. From 0·5 to 9·5 grammes were given daily. The dose depended more upon the severity of the disease than upon the age of the patient. In order to prevent a relapse, the drug should be continued several days after signs of the disease have disappeared. A convenient vehicle for its administration is syrup of orange or cinnamon. Unpleasant effects were never observed. Neither the stomach, bladder, nor kidneys were disturbed in any way.

REFERENCE.—[1] "Arch. Jahrb. Kinderh.," B. xviii., H. 1.

MANIA (Acute). *Græme M. Hammond, M.D., New York.*

De Weit considers that it is of the greatest importance to induce sleep in all cases of acute mania. He prefers to give **Chloral** in from 40 to 60-grain doses. He considers this to be the most reliable of all remedies, particularly if it is combined with the bromides. Sometimes chloral, even in very large doses, fails to produce sleep. In such cases it may be reinforced by **Opium** in large doses. Small doses of opium excite the patient, and do more harm than good. The new and milder coal-tar derivative hypnotics are practically inert, and are of little value for this purpose. (See also "Insanity.")

REFERENCES.—"Lancet," and "Clinic," June, 1895.

MENIERE'S DISEASE. *Græme M. Hammond, M.D., New York.*

Three cases of Ménière's disease were treated by Labit,[1] in Mouré's Clinic at Bordeaux, with hypodermic injections of **Pilocarpine.** One had sclerotic catarrh of both middle ears; the others were free from aural disease. All had typical symptoms, such as noises in the ears, vertigo, nausea, or vomiting, and deafness to osseal as well as to aërial sound vibrations.

The first case received fifteen injections of from $\frac{1}{25}$ to $\frac{1}{8}$ gr. of pilocarpine; the second, thirteen injections of from $\frac{1}{13}$ to $\frac{1}{3}$ gr., and the third, eight injections of from $\frac{1}{25}$ to $\frac{1}{4}$ gr. In all cases the vertigo disappeared, the noises diminished, and the hearing was, to an extent, restored.

REFERENCE.—[1] "Rev. de Laryngol.," etc., Sept. 1, 1894.

MENINGITIS. *Græme M. Hammond, M.D., New York.*

The very important part the tubercle bacillus plays in grave forms of meningitis is well known. The question naturally arises whether all meningeal inflammations do not depend upon microbic infection. In an editorial in the "Journal of Nervous and Mental Diseases,"[1] this subject is thoroughly discussed.

The various bacilli described are the streptococcus meningitis (very common); golden staphylococcus meningitis (very rare); a pneumococcus meningitis (very common); the typhoid (Eberth) bacillus meningitis (accompanying typhoid fever); and the Klebs-Löffler bacillus meningitis (following diphtheria). This list is likely to be extended as the specific microbes of grippe, scarlet fever, small pox, etc., become recognized. Contributions to the subject of the infectious nature of meningitis have been published by Guinon,[2] Dupre,[3] Ranzier,[4] Hutinél,[5] and Grassitt.[6] These authors in the main agree that meningitis, when not due to traumatism, is the result of some micro-organisms.

A Constant Sign in Incipient Meningitis.—Simon[7] considers that the beginning of meningitis, which is often so difficult to recognize, can be detected in many instances by the exhibition of irregularity in the respiratory movements of the diaphragm and the thorax. They do not act synchronously. This condition can be readily detected by manual manipulation.

Tubercular Meningitis.—According to Hirschberg,[8] death in cases of tuberculosis is due to intra-cranial compression. He therefore recommends treatment by trepanation and drainage, but he insists that the operation should be performed prior to the stage of coma. Ord and Waterhouse report a case of tubercular meningitis in a child of five years of age, in which the operation was performed six weeks after symptoms were noticed, viz., trepanation was performed in the occipital region, the dura and arachnoid were divided, and a drainage tube inserted between the cerebellum and the medulla. The symptoms immediately improved. The tube was kept *in situ* for seventeen days, and in spite of an intercurrent attack of measles, the child recovered.

REFERENCES.—[1]"The Bacteria of Meningitis," Jan., 1895; [2]"Traite de Médicine," 1894; [3]"Manuel de Médicine," [4]"Traite de Médicine du Systeme Nerveux," 1894; [5]"Sémaine Med.," June, 1892; [6] Ibid., March, 1894; [7]"La France Méd.," March 29, 1895; [8]"Bull. Gènèr. de Thérap.," Nov., 1894.

MENSTRUATION (Disorders of).

Synopsis.—(Vol. 1895, p. 47.) Tincture of **Senecio Jacobæa**, ℥ij doses at first, or liquid extract, 20-minim doses; or **Senecin**, 2-grain doses, in amenorrhœa.

MESENTERY (Surgery of). *A. W. Mayo Robson, F.R.C.S.*

Thrombosis of the Superior Mesenteric Vein.—With regard to the diagnosis there are certain symptoms which, when associated, are fairly, though not positively, characteristic. They seem to be, in the order of their importance, as follows: (1,) Colicky, very intense, not definitely localized, abdominal pain; (2,) Bloody diarrhœa; (3,) Subnormal temperature. Vomiting, if present (and next to pain it is the most frequent symptom), strengthens the diagnosis, as do also abdominal distension and marked prostration; but the first two or first three symptoms, when occurring in combination, are the only ones that can be called in any sense characteristic. Pain is the first symptom more often than any one other, and its intense character is dwelt on by several authors.

Gerhardt and Kussmaul speak of the evidence of embolism elsewhere in the body as one of the symptoms essential to making the diagnosis. When present, it is, of course, of great value; but, as already pointed out, it occurred in but few of the cases enumerated here (eight). The co-existence of cardiac disease and atheromatous arteries is also affirmatory in connection with the important symptoms mentioned. There remain a considerable number of cases in which there are no well-marked abdominal symptoms; in these it is impossible to make a diagnosis. In about one-fourth of the cases the symptoms are seen to be sufficiently characteristic to warrant the diagnosis. In none could the extent of the intestinal lesion or the situation of the thrombosis or embolus have been determined without surgical exploration of the abdomen.

Surgical Operation.[1]—In about one-sixth of the cases the autopsy showed that the intestinal lesion was sufficiently limited and well defined to allow of a successful resection of that part of the bowel.

In the majority of cases there are coexisting diseases, most frequently cardiac or renal, or atheromatous arteries, and most of the patients are beyond middle life.

There is, on the other hand, a small minority of cases of individuals

below middle life in whom the source of the embolus or cause for thrombosis is obscure or undiscoverable, in whom no serious disease of other organs can be detected.

Practically, all patients die when left to themselves, or under any form of medical treatment.

From the above considerations it may be concluded that laparotomy is indicated in all cases in which the symptoms suggest the nature of the disease, and in which the patient is not too greatly prostrated or has not some fatal disease. There will probably occur a few in which the local and general conditions of the patients are favourable to success. Where a not too extensive portion of the gut is involved, if possible, resection of the diseased part should be practised; otherwise an artificial anus should be made, and if the patient survives, the cut ends of the bowel may be united subsequently. That this is actually possible is shown in the remarkable case of Elliot's, referred to below.

Dr. J. W. Elliot[2], in a paper on the operative relief of gangrene of intestines due to occlusion of the mesenteric vessels, describes two cases for which he had performed abdominal section. The first case occurred in a man, aged twenty-five years, in whom there appeared to be no cardiac or other evident cause of embolism.

Forty-eight inches of gangrenous intestine were resected, and an artificial anus formed; two weeks later the bowel was united by operation.

A fistula following this operation was closed by intestinal resection, which was followed by complete recovery. The infarction was due to thrombosis of the superior mesenteric veins, probably due to a bacterial inflammation commencing in the intestine.

The second case, that of an old man, nearly seventy years of age, was due to thrombosis of a branch of the mesenteric artery, secondary to atheromatous change in its walls.

An artificial anus was formed, but death followed, owing to perforation of the gangrenous gut and purulent peritonitis.

REFERENCE.—[1] Watson, "Boston Medical and Surgical Journal," Dec. 6, 1894, and "Therap. Gaz.," April 15, 1895; [2] "Annals of Surg.," Jan., 1895.

METRITIS.

Synopsis.—(Vol. 1895, p. 373.) **Absolute Rest, Laudanum Fomentations** over stomach, frequent **Hot Irrigations** with emollient and slightly **Aromatic Liquids**, *e.g.*: ℞ Chloral, Naphthol, Alcohol, āā ʒiij; Water, ʒviij; M. ʒss to a quart of hot water. After each injection place on the os a pledget of cotton soaked in: ℞ Iodoform, ʒj; Chloral, ʒj; Glycerine, ʒiij. **Blisters** to abdomen relieve severe pain, or compresses sprinkled with **Turpentine** or **Alcohol** and covered with oil silk. **Scarification** and **Leeches** to the os should not be used during acute stages.

METRORRHAGIA. *Theophilus Parvin, M.D., Philadelphia.*

Kallmorgen,[1] of Berlin, treated one hundred cases of metrorrhagia with the active principle of hydrastis canadensis (**Hydrastinine**). These cases were thus divided : twenty-five of menorrhagia ; twenty of chronic endometritis ; four of metrorrhagia connected with disease of the appendages ; five of retro-uterine hæmatocele ; eighteen of metrorrhagias occurring in the course of pregnancy ; four of uterine myomata ; and, finally, two of bleeding, in consequence of inoperable uterine cancer. These patients were under observation during at least twenty-one months after the treatment was discontinued, some of them for two years and a quarter.

The best results occurred in cases of hæmorrhage consecutive to hæmatocele, in simple menorrhagias, in metrorrhagias following an abortion, and those connected with disease of the appendages. The results were not so good in cases of chronic endometritis; they were doubtful, or failures in metrorrhagia, in pregnancy, in myomata, and cancer.

For the bleeding between menstrual periods, Reinstader[2] gives the following formula :—

℞ Ergotin	parts 10	Glycerin	parts 10
Aquæ Destillatæ	parts 70	Acid Salicylic	parts 20

A tablespoonful of this solution in three tablespoonfuls of water is injected into the rectum, the patient lying upon her stomach.

Chouppé, Huchard, and Chéron advocate the use of **Antipyrin** as a valuable hæmostatic in uterine hæmorrhage. It acts best locally.

M. Labade-Lagrave[3] has a method by which antipyrin can be used locally. To do this, have a test-tube, one-third filled with equal parts of salol and antipyrin ; heat over an alcohol lamp ; fusion is produced in two or three minutes, and a slightly brownish liquid results. This has the disadvantage of rapidly solidifying when withdrawn from the action of heat for a few minutes, and in order to retard the solidification, the tube should be subjected to heat until the mixture becomes a distinctly brown colour.

REFERENCES. — [1] "Zeitschrift f. Geburtshülfe und Gynäkol.," ; [2] "Therap. Gaz.," Dec. 5, 1894 ; [3] "New York Med. Journ.," March 30, 1895.

MICROCEPHALUS. *Henry Dwight Chapin, M.D., New York.*

Dr. Carl Beck[1] reaches the following conclusions in reference to **Craniectomy** in microcephalus :—

(1,) Craniectomy is a justifiable operation, and apt to be successful in the treatment of microcephaly with idiocy.

(2,) The success depends on the kind of microcephaly and the degree of idiocy.

(3,) Acquired and late forms give a better prognosis than congenital forms.

(4,) The danger of the operation is not very great.

(5,) The operation ought to be quite extensive, that is, the incision in the skull large enough to permit dilatation, and the circular method of Gersuny ought to be given a trial.

(6,) The patients must be given a thorough pedagogic treatment afterwards.

(7,) The single cases ought to be followed up for years and reported from time to time.

Dr. Græme M. Hammond, from experience with eleven cases of idiocy, all of which were microcephalic, and all of whom survived the operation of craniectomy, is not encouraged to hope for any material cerebral development from this operation. In not a single instance was there any marked improvement.

REFERENCE.—[1] "Journal American Medical Association," 1894, xxiii., 692.

MIGRAINE. *Græme M. Hammond, M.D., New York*

Claus[1] classifies this disease into simple, ophthalmic, and ophthalmoplegic varieties. The former includes hemicrania, associated with nausea, vomiting and other disturbances, which go to make up the familiar picture of "sick" or "bilious" headache. The ophthalmic form is accompanied by scintillating scotomata. This form may follow the first variety, or alternate with it, and may be accompanied by hemianopsia and sensory and motor disturbances. The ophthalmoplegic form differs from the others in that the hemicranial pain is more intense, and terminates in a paralysis of the third nerve to a marked degree. This paralysis is on the same side as the pain, and lasts for days, and even weeks. The author does not agree with Fèrè's view that migraine is a species of epilepsy, but supports the auto-intoxication opinion for its causation, and lays stress upon the frequent association of chlorosis in these cases.

REFERENCE.—[1] "La Flandre Méd.," Nos. 7, 10, 16, 1894.

MOLLUSCUM CONTAGIOSUM.

Synopsis.—(Vol. 1895, p. 374.) The little growths can be removed by **Expression**, with or without incision, or by **Electrolysis** if the numbers are limited. Touching or puncturing with **Pure Carbolic Acid**, followed by painting with **Flexible Collodion** or **Mercurial Plaster**; puncturing with a toothpick dipped in **Chromic Acid**, 50% solution, or with **Corrosive Sublimate**, 1% solution.

MOUTH (Antisepsis of).

Synopsis.—(Vol. 1895, pp. 11, 67 and 151.) The less solid food taken the greater should be the care of the mouth. It should be rinsed several times a day with lukewarm water containing a little **Common Salt** and **Tincture of Myrrh** or **Eau de Cologne.** Bleeding gums or bad teeth require powdered **Boric Acid** rubbed twice daily between lips and gums. False teeth should be removed if no food is being taken. In semi-conscious patients examine teeth for small sores, and powder with boric acid. Cracks in corners of mouth heal quickly if dried with a clean towel and treated with **Boric Acid** or **Vaseline.** In ulcerative stomatitis and noma, **Mercuric Perchloride,** 1 in 1000, is best. Other washes are **Sodium Hyposulphite,** gr. 3 to ℥j; **Borax** and **Carbolic Acid,** 3 to 5%, applied with a brush; **Liq. Sod. Chlorinatæ,** ℥j to aq. Oj, is effective but unpleasant. For internal use in all forms of septic inflammation of mouth and throat give: ℞ Liq. Hyd. Perchlor., ℥j; Pot Iodid., gr. ij; Tinc. Myrrhæ, ♏10; Aq. Dest., ad ℥j. *Sig.*—1 to 4 teaspoonfuls every two to four hours, in small sips. In applying the solutions all mucus should first be removed from mouth and throat by rinsing or swabbing with **Lime Water** or other weak **Alkaline Wash.** Antisepsis of mouth is advised during infective bronchitis. Kobner uses **Belladonna** in full doses for leukoplakia, mercurial stomatitis, syphilitic ulcerations, mucous patches, etc.

MYOMATA (Uterine). *Theophilus Parvin, M.D., Philadelphia.*

Ligation of Uterine Vessels for Myomata.—This is advocated by the "American Medico-Surgical Bulletin" (May, 1895), in the treatment of myomata of the size of the fist. Possibly it may be useful in larger tumours, causing metrorrhagia.

Curetting is first employed, if there be, as there frequently is, endometritis. Next, colpotomy is done, as in vaginal extirpation of the uterus, the bladder being separated from the uterus. Guided by the index finger, a needle carrying a silk ligature is passed so as to secure the lower third of each broad ligament, and the silk tied. Then the vaginal incision is closed by catgut. The patient remains in bed for eight days. In some cases ergot is given, and its beneficial action, though previously unobserved, may be quite apparent. (The editor must express his doubt as to the wisdom of this operation, when anterior colpotomy will present in most cases, an absolutely certain and permanent cure in growths of the size mentioned.) (See Article on "Uterine Displacement.")

Dr. Thomas More-Madden[1] takes the ground that the value of surgical treatment of uterine myomata is much over-estimated, stating that the large proportion of these growths demand no active interference, and that of the remaining number many may be successfully managed without surgery. He asserts that he has rarely seen death directly attributable to these growths, but he has seen many resulting from operations. He believes that hysterectomy, whether abdominal,

or vaginal, should not be employed unless serious and uncontrollable symptoms arise. He advises keeping the patient at rest, so far as practicable, during the menstrual period, **Ergot** by the mouth, and hypodermic injections, and **Oil of Turpentine,** 20 drops every three or four hours, until hæmorrhage is checked. **Potassium Iodide, Tincture of Iodine,** and **Corrosive Sublimate** are useful in lessening the size of the growths ; occasionally iodated and bromated mineral waters are useful for the same purpose.

REFERENCE.—[1] "Amer. Med. Surg. Bull."

NÆVUS. (See also "Veins, Diseases of.")

P. G. Unna, M.D., Hamburg.
Norman Walker, M.D., Edinburgh.

Jackson Clarke showed at the North West London Clinical Society, Dec. 12th, 1894, a case where a nævus had been treated by **Electrolysis.** He considered it a radical method of treatment in some cases, but as chiefly useful as a preliminary to excision. He used a current which was sufficient to decompose water.

NASA FEVER. (See "Fever, Nakra.")

NEPHRITIS. (See "Bright's Disease.")

NERVES (Suture of). *William Thorburn, F.R.C.S.*

Howell and Huber[1] investigated most thoroughly the degeneration and regeneration of divided nerves. They conclude: (1,) That primary union of a nerve without degeneration of the peripheral end, does not occur (the explanation of practically immediate return of sensation after nerve suture is discussed in the "Medical Annual" for 1894, p. 431) ; (2,) The time of degeneration varies, but the fact of complete loss of irritability being present after two to four days in dogs shows that the degenerative process commences early ; (3,) The return of irritability and conductivity in a peripheral nerve after union was first noticed at the end of twenty-one days, being nearly complete in the majority of cases at the end of eleven weeks. This return of function begins first in the neighbourhood of the wound, and extends centrifugally, although the branches do not improve in regular anatomical order.

They have collected eighty-four cases of primary suture ; 42 per cent. were successful, 40 per cent. improved, and 18 per cent. derived no benefit from the operation.

Willard[2] examined most carefully the microscopic appearances in nerve-suture and nerve-grafting in dogs. He endorses the above conclusions, and adds : "(1,) That union is accomplished chiefly by the reaching out and development of nerve fibres from the

divided proximal end. The fan-like projection of these fibres is very marked in each case ; (2,) Engrafted nerve-tissue or flaps cut from the nerve may serve as a frame-work for new tissue, or may produce embryonic nerve fibres capable of assisting in re-union."

In a later communication[3] the following clinical conclusions are given: (1,) Primary suture should never be neglected ; (2,) Secondary suture should be attempted even after years. Repeated operations may ultimately succeed if the nerve be thoroughly stretched, cleared of surrounding scar-tissue, and the ends brought together ; (3,) When the loss of substance has been large, a nerve graft, taken preferably from a freshly-amputated limb or from an animal, should be used. This usually gives better results than the operation of splitting the nerve and turning the flaps into the gap ; (4,) The distal portion of a severed nerve rapidly degenerates, as does also an interposed graft, yet subsequent regeneration may take place.

REFERENCES.—[1] "Journ. of Physiology," vol. xiii. ; [2] "Internat. Med. Mag.," Apl., 1894 ; [3] "Medical News," Oct., 1894.

NERVOUS DEPRESSION.

Synopsis.—(Vol. 1895, p. 30.) Robin employs **Glycero-phosphates of Calcium, Sodium, Potassium**, etc., alone or in combination, by mouth or subcutaneous injection, as general nutrients.

NERVOUS DISORDERS OF WOMEN.

Thomas More-Madden, M.D., F.R.C.S., E., M.R.C.P., Dublin.

Amongst the difficulties of every day practice there are probably few of greater importance than those connected with the differentiation and treatment of the cerebro-nervous affections by which gynæcological complaints are especially liable to be complicated or counterfeited. Foremost amongst these sympathetic or symptomatic neuroses are the neurasthenic affections, so frequently associated with catamenial disturbances, more particularly about the epochs of the inception and termination of menstrual vitality, and directly consequent on the complex structural and functional changes then in process in the reproductive system, the predominant influence of which is manifest at every stage of woman's life until she has passed the term within which utero-gestation is possible.

The commencement of menstruation is marked by a sudden and complete revolution in the female mental as well as physical constitution, whilst at each succeeding monthly ovulation there is a coincident recurrence of constitutional and nervous disturbance acting on the general economy through the wide-spread ramifications of the vaso-motor and sympathetic systems. Moreover, when that function has become regularly established and is normal in every respect, the

accompanying sympathetic derangement may be so slight as to escape observation ; this is seldom if ever the case at the commencement of menstruation. For some time previously to the first catamenial flow the patient usually complains of a sense of general malaise, and not infrequently becomes more or less irritable, nervous, or hysterical, and prone to prove the subject of various self-created morbid impressions or fancied symptoms of disease. Under such circumstances, under the guise of nearly every complaint that may affect a girl on the approach of puberty, whether the trouble be spinal, cardiac, or pulmonary, and more especially if it takes the shape of any of those obscure forms of disease such as hystero-epilepsy and other neuroses which are common at that age, and for which no physical cause is apparent or discoverable, the physician may frequently be able to detect the impress of sympathetic nervous derangement originating from menstrual disorder.

At the same time, I need hardly say that whilst thus prepared to meet with the protean forms of hysteria, under such circumstances simulating and complicating every variety of disease, we should be no less cautious with regard to the graver error of ignoring or misinterpreting the evidences of actual physical disease in any patient however hysterical she may be. Nor should a neurasthenic or a hysterical patient ever be considered as undeserving of medical attention, these neuroses being in the great majority of cases, symptomatic of morbid conditions calling for careful investigation and treatment. Thus, for instance, even the ordinary hysterical paroxysm, so commonly regarded as too trivial to require any special medical care, being frequently consequent on uterine, tubal, or ovarian disease or irritation, if ignored, may eventuate in the gravest forms of cerebro-nervous disease, viz., epilepsy or insanity.

Diagnosis.—In the differentiation of hysteria from other gynæcological complaints it should be borne in mind that the nervous symptoms in many cases, may so predominate as to overshadow and obscure the evidences of their local causes. In such cases, however, hysterical may commonly be distinguished from physical disease by the general aspect and condition of the patient ; her increased nervous susceptibility, mental excitability and irritability of temper, perverted or altered moral disposition, diminution of inhibitory nerve force, impairment of volition and mental disturbances reaching in some instances to the extent of actual delusions. These cerebro-nervous complications, I should observe, are more frequently associated with either amenorrhœa or with dysmenorrhœal troubles, than with any other diseases.

The Voice in Hysteria.—As an indication of hysterical disease, especially in amenorrhœal cases, the changed character of the patient's voice may be mentioned. This alteration consists in a loss of that peculiar softness and melody which distinguish the female from the male voice. In hysteria the patient's intonation either becomes more rough and masculine than normal or else more shrill and piercing or metallic than usual, as well as more rapid in the sequence of its modulations. The hysteric voice is not easily described, but once recognized it is, I believe, an unmistakable evidence of nervous functional disturbance consequent on some derangement of the utero-ovarian functions.

Hystero-Epilepsy.—Epileptiform disease is unquestionably most frequently observed in women of well marked neurotic temperament, and is then commonly found associated with some utero-ovarian derangement. In such cases the convulsive seizures are apparently undistinguishable from ordinary epileptiform convulsions, from which, however, they may be diagnosed by Charcot's temperature test, as well as by the previous history and physical condition of the patient. Within the last twenty years many cases of hystero-epilepsy have come under notice in my wards, and in comparatively few of these was the influence of any uterine flexion so apparent as it was found by the late Dr. Grailey Hewitt and other writers, whilst in the larger proportion of my cases of this kind dysmenorrhœa was present.

Mental Delusions connected with Hystero-Epilepsy.—Of the hysterical symptoms which commonly usher in epileptiform disease, probably the most universal are, delusions on the subject of health, unjust complaints, recriminations without foundation, and decided sexual tendencies. These symptoms are still more marked at the moment that consciousness returns after an epileptic seizure, when the patient slowly and indistinctly begins to remember something that may have happened immediately before or even during the paroxysm. Occasionally there is then a curious interblending of the patient's recollection of her real and fancied condition. In that condition the phenomena of the pre-epileptic aura occasionally come into startling prominence, and are insisted on as of actual occurrence. In this way illusions from epilepsy in gynæcological practice may become of serious medico-legal interest. Thus in not a few instances, charges of assault on females which have puzzled the ingenuity of detectives and taxed the imagination of journalists, might, perhaps, have been better elucidated by a physician conversant with the delusions of hysterical women.

Hysterical Trance.—Neurasthenic evidences of uterine disorder

may also manifest themselves by diminished nervous activity and general or local anæsthesia. Perhaps the most remarkable illustration of this fact is afforded by hysterical trance or cataphora, in which many of the ordinary phenomena of vitality are suspended by a morbid condition apparently almost undistinguishable from death. In a paper of mine in the Proceedings of the Academy of Medicine in Ireland, those interested in this subject may find well-authenticated cases in which patients in a state of hysterical trance or cataphora, so profound as to counterfeit death, have been actually consigned to the tomb, or were only rescued from it by some happy accident.

Hysterical Paralysis.—The nervous symptoms of unsuspected utero-ovarian functional disturbances may also be manifested in the simulation of every form of paralysis, from the most trivial local loss of power to complete paraplegia. The latter was exemplified in the case of a young lady, aged nineteen, who had never menstruated, and who, when I first saw her, had been for nearly eighteen months confined to bed with apparent complete loss of power of the extremities. During this period she had been actively treated by several practitioners, by whom she had been alternately submitted to Faradisation, the various nerve tonics, blistering, hot and cold baths, and douches, as well as ultimately being enclosed in a plaster jacket to remedy the supposed spinal cause of her condition. None of these remedies, however, proved of the smallest use until after an interval of nearly two years from the commencement of the attack, her menses for the first time made their appearance, and from that date she rapidly regained her former health.

Nervous Disorders of Pregnancy and the Puerperal State.—In obstetric practice we meet with the most obvious illustrations of the influence of uterine causes on the mental and nervous functions. During pregnancy there is a general tendency to nervous and cerebral disturbances. To this may be ascribed those otherwise unaccountable alterations in tastes and dispositions, that irritable condition of mind and temper, those unreasonable likings and aversions, irresistible longings and foolish fancies which in some women accompany pregnancy. Familiar instances of sympathetic or reflex nervo-mental disorder arising from pelvic irritation, will at once occur to every obstetrician. Of this nature, for instance, is that transient delirium so commonly observed at the termination of the second stage of labour, during the exit of the fœtal head through the vulva. The peri-uterine origin of certain forms of mental disorder is also strikingly evinced in puerperal mania or insanity consequent on parturition. This is usually preceded by the

premature suppression or diminution of the lochia, which become fœtid as well as scanty in such cases. Hence the associated mental disturbance resembles those forms of delirium that occur in the course of many other disorders in which toxæmia or septicæmic blood-poisoning, whether from arrested excretion or from infection with septic germs of disease, results in cerebral disorder. Puerperal eclampsia on the other hand is as obviously dependent on reflex uterine irritation as puerperal mania is on the abnormal vascular condition of the brain from puerperal causes.

Hysterical Pseudocyesis.—A tolerably frequent result of reflex nervous disturbance associated with functional derangement of the reproductive system is pseudocyesis. This condition usually occurs about the time of the final cessation of menstruation, or climacteric period. More than once, however, I have been consulted in cases of spurious pregnancy occurring in women under twenty years of age. In many instances I have found the earlier symptoms of hysterical pseudocyesis hardly distinguishable from those of true pregnancy. Thus, we often meet with cases of complete amenorrhœa, followed by morning sickness, turgescence of the breasts, enlargement of the abdomen, etc., occurring in middle-aged hysterical married women who desire to be thought pregnant. Sterile women under such circumstances not uncommonly become hysterically insane on this subject, and take extraordinary, and often successful pains to persuade those about them as well as themselves that they are pregnant, when really only suffering from the symptoms of the change of life, dyspepsia, dropsy, or mere obesity.

Insanity of Gynæcological Causation.—The increase of insanity of late years amongst the female population of these countries is a fact of the gravest, social, as well as medical, interest. Formerly, when women were content to be women, mental disease was more frequent amongst men, who from their habits and occupations were then more exposed to the various causes of mental excitement. Nowadays, on the contrary, it may perhaps flatter the new woman to know that man's pre-eminence in this respect at least no longer exists, the growth of insanity having become most rapid in her own sex. Other factors in the causation of this prevalence of mental derangement in women may, I think, be found in the daily augmenting proportion of certain gynæcological complaints productive of cerebro-nervous disturbances, that in many instances, ultimately find their way into the hands of the specialist in mental diseases. The influence of gynæcological and obstetric causes in this way, can, I think, be easily shown; thus for example, the common occurrence of

amenorrhœa in the early stages of insanity is unquestionable, and in such cases there would seem to be an immediate relation between the catamenial suppression, and the mental derangement illustrating that intimate connection between physical and mental sanity which, although generally ignored by alienists, is obvious to those engaged in gynæcological practice, in which utero-ovarian irritation and menstrual irregularities are frequently found conjoined with cerebro-nervous complaints. The mental affections thus associated with disordered menstruation or chronic peri-uterine and sexual irritation are usually characterised by exaggerated nervous susceptibility, intense egotism, manifested in the absorption of the patient's mind, in the symptoms of her fancied disease, and extreme irritability of mind and temper, or perversion of the moral faculties rather than any tangible delusions of the intellectual powers. The latter are by no means infrequent, however, in cases of suppressed menstruation.

Cerebral disease is by no means generally traceable by pathological investigation in cases of insanity, and in many instances this condition is directly connected not only with disordered menstruation as just shown, but also with puerperal septicæmia, directly affecting the vascular state and functional activity of the brain. In gynæcological practice mental disturbances moreover come before us as the result of reflex irritation from tubal or uterine disease.

The general non-recognition of utero-ovarian disorders amongst the insane in lunatic asylums is easily understood, inasmuch as there is commonly amongst those suffering from mental disease a peculiar insensibility to physical suffering, caused by impaired nutrition of the nervous centres, and therefore the usual evidences of disease do not disclose themselves in their ordinary course. Under such circumstances no complaint of uterine disorders being made by the patients, nor any special inquiry instituted by their attendants, these diseases may unsuspectedly run their course as long as existence endures.

Non-Physical causes of the Cerebro-Nervous Disorders of Women.—In addition to those local and reflex irritations, diseases and functional derangements of the sexual system that have been referred to, there are other causes of the increasing frequency of nervous affections observable in women. The factors, although non-physical, are so directly connected with the causation of many of the disorders that are the subject of this article, that some enumeration, at least, should be here made of the most important of them, viz: Firstly, the misdirected tendency of modern female training, in instances where, to the detriment of mental as well as bodily health, it is attempted to force women's minds and mode of life into masculine channels and

pursuits for which Nature has neither designed nor fitted them. Secondly, in this connection must be mentioned the influence of precocious or undue stimulation of the sexual functions, and thirdly, the existing prevalence of alcoholism, which is now hardly less deplorable in women than in men. These circumstances, although commonly ignored, are certainly not beyond the cognizance and concern of medical practitioners, who like myself have had occasion to deal with their result in some of the disciples of the *fin de siecle* "New Woman" cult, who, whilst aggressively strong-minded to the casual observer, to their physician disclosed the most marked evidences of neurasthenic disease, or even exhibited a condition of hysterical excitability closely bordering on insanity.

TREATMENT *of Hysterical and Neurasthenic Disorders.*—Although it would be impossible within the limits of this article to discuss in any detail the treatment of the protean forms of nervous disorders to which women are peculiarly liable, nevertheless, I may be permitted to refer to a few points of general importance in the management of hysterical disease. Obviously in all such cases our primary object must be the allayment of abnormal nervous excitability or hyperæsthesia by the improvement of the patient's general condition, together with the removal of any existing tubal, ovarian, or uterine disease or displacement with which the neurotic symptoms may be connected. As a rule, however, in the majority of neurasthenic instances topical measures, except for the rectification of some well marked flexion or displacement, should not be precipitately resorted to, nor employed until after a fair trial of constitutional treatment. Foremost amongst the constitutional remedies by which we may hope to allay the abnormal nervous susceptibility or perverted molecular activity of the nervous centres are the special nerve sedatives and tonics, such as the various **Bromides** or **Valerianates of Quinine, Zinc,** and **Iron, Ammoniated Tincture of Valerian, Methylene-blue,** and lastly, though above all, **Biborate of Soda.** The value of the latter remedy, which was suggested to me by Mr. T. H. Nally of the Mater Misericordiæ Hospital, in such instances is by no means sufficiently recognized, and has been amply tested and proved by my experience of its use as a nerve sedative in neurasthenic and hysterical cases. I may also observe that in these complaints I seldom employ narcotics or hypnotics, such as opium, morphia, chloral, urethane, or chloralamide, and I would venture to impress on others my own conviction of the general unsuitability of drugs of this class, and more especially sulphonal (of which Von Montyel has well said, *le sulphonal n'est pas un medicament, mais un poison*) in the treatment of any of the chronic

neuroses of women. Unfortunately, however, the habitual use of the last mentioned agent has recently become widespread amongst neurasthenic females, with the inevitable result of gradually increasing cerebro-nervous disturbances, and physical and mental prostration. Hence at the present day one of our duties in dealing with a hysterical woman should be to ascertain whether this slow poisoning hypnotic drug habit complicates her symptoms. If this be the case we must then only place its dangers clearly before her and endeavour to appeal to her reason, and so, if possible, induce her to break that spell. Otherwise, it matters little what treatment we adopt, as it will be vain.

The majority of hysterical cases occur in anæmic or chlorotic patients suffering from either amenorrhœa or dysmenorrhœa. In the former, **Ferruginous Preparations** in combination with minute doses of **Arsenic** and **Nux Vomica**, or else one or other of the **Syrups of the Hypophosphites** or **Hydrobromates**, or similar compounds, may generally be prescribed with advantage. In the latter class of cases, the causes of menstrual difficulty must be ascertained and removed. Subsequently in either case if the position of the patient be such as to admit it, a visit may be recommended to some foreign chalybeate spa, so as to conjoin the benefits of change of climate, scene, occupation, and habits of living with those of the mineral water prescribed. No cases so much demand the exercise of the highest qualities of the physician as the treatment of the nervous and mental complications of organic disease or functional derangement of the female reproductive organization In such instances the gynæcologist must rise above a narrow specialism. He must deal with the local disease, displacement, or functional disorder of which the cerebro-nervous disturbance may be a result. But in doing so he must avoid as far as possible increasing the existing local hyperæsthesia and the probably exaggerated attention already fixed on this by the patient, by any topical treatment that is not absolutely indispensable.

Moreover, in order to correct the perverted mental conditions which have been alluded to, it will be our duty in most instances to strive to act on the moral as well as on the physical constitution of our patients, by insisting on healthy occupation of mind and body, and to fit the latter for this by appropriate remedies, indicated by the special exigencies of each case. Thus, if the nervous disturbance be consequent on disordered menstruation, this must, if possible, be restored to the normal functional activity. If it result, unmistakably, from undue or premature stimulation of the sexual functions, or from alcoholism, we are then I think bound to point out as forcibly as possible the fell consequences of such abuses.

In conclusion, I have only to add, that as the causes, diagnoses, and treatment of the cerebro-nervous disorders peculiar to women, appear to be very unduely neglected in many gynæcological text-books, I venture to hope the present *résumé* of my experience of these affections in the hospitals with which I have been connected, and of my previous writings on the subject,* being the result of clinical observation, may possibly be found serviceable by some of my junior brethren when confronted with the neurotic complications of gynæcological or obstetric cases.

REFERENCES.—**Vide* [1]"Transactions, Academy of Medicine, Ireland," vol. i., p. 250; [2]"The Clinical Journal," London, January 4, 1893; [3]More Madden's "Clinical Gynæcology," p. 473, London and Philadelphia, 1895; [4]"Quain's Dictionary of Medicine," vol. ii., p. 754, London, 1895.

NETTLE RASH. (See "Urticaria.")

NEURALGIA. *Græme M. Hammond, M.D., New York.*

Buxbaum[1] claims that in eighty-three typical cases of neuralgia, **Hydrotherapeutic Treatment** was only unsuccessful in 5 per cent.; 60 per cent. were cured, and the remainder greatly benefited. The patient is exposed to alternating douches of hot and cold water applied to the painful area. The alternating *Scottish douche* is of particular service.

REFERENCE.—[1]"Deutsche Med. Woch.," Dec. 27, 1894.

Synopsis.—(Vol. 1895, pp. 19, 32, 35, 51 and 379.) **Croton Oil** acts as a revulsive, and probably specifically in neuralgia, tic douloureux and sciatica. Equal parts **Guaiacol** and **Glycerine** painted on the skin for articular neuralgia of the shoulder in a tuberculous patient relieved. **Malacine** is commended for neuralgia. **Sumbul**, 5 to 30 minims of fluid extract, said to act as a nerve tonic. **Gelsemine**, gr. $\frac{1}{60}$, thrice daily.

Surgical Treatment of Neuralgia. *William Thorburn, F.R.C.S.*

Rose[1] reports two cases in which he divided the second and third divisions of the fifth nerve, using the Braun-Lossen method. Five months after the operation there had been no return of symptoms. There was very little scarring, and no impairment in the mobility of the jaw in either case.

Removal of Gasserian Ganglion.—Novarro[2] gives details of an operation performed early in 1891 by a modification of Kronlein's method, the ascending ramus of the jaw being resected in a horizontal direction. The inferior and posterior part of the ganglion was destroyed, and the patient was free from neuralgia for a year and a half. Then sensibility, not merely tactile and to heat, but to pain, returned, with the peculiarity that the neuralgic pains now shot from below upwards. In view of the fact that sensibility thus

returns after a time, by way of the branches of the cervical plexus, Novarro asks whether an operation of such severity is necessary, and whether the surgeon should not content himself with resection of the second and third divisions at their outlet from the skull.

D'Antona[3] modified Rose's method by turning a flap both upwards and downwards from the zygoma. The anæsthesia began to disappear in about twenty days, and a year and eight months after operation the patient was found entirely free from neuralgia, and with no limitation of jaw movement.

In another case, reported in the same paper, hæmorrhage compelled the operator to content himself with dividing the third division only of the trigeminus, although the first was that most affected by the neuralgia. In spite of this, the cure was maintained fourteen months after operation.

Richardson and Walton[4] give a successful case operated on by the Krause-Hartley method, the ganglion being exposed from the side and above, instead of, as in Rose's procedure, from below. They contrast the merits of the two operations, and consider that the slight extra risk following on the opening of the dura, and the possibility of intra-cranial hæmorrhage and of slight injury to the brain itself, are more than counterbalanced by the clear and open view of the field of operation obtained. Probably the lateral operation diminishes the danger to the internal carotid, and to the cavernous sinus with the ocular nerves in its wall. Probably, too, there is less likelihood of masticatory troubles following this method of operation. Any risk of panophthalmitis is avoided by leaving the first division with the part of the ganglion to which it is attached, although, as a matter of fact, this complication has only been recorded once—in one of Rose's earlier cases. In Richardson and Walton's case there was slight aphasia for five days, and some temporary loss of memory two weeks after the operation. Transient oculo-motor paralysis has been known to take place.

Keen and Mitchell[5] also report a case in which the Krause-Hartley method was used. The patient had survived no less than fourteen previous operations, in which the peripheral nerves had been divided or resected. Five months after the radical operation, a good result was still present. These same authors collect forty cases of complete or partial excision of the ganglion with six deaths.

It is interesting to note that the operations we have just been contrasting, that of Krause and Hartley and that of Rose, have each been performed nineteen times with two deaths.

Other cases have been recorded by Finney[6] (three with one

death) and by O'Hara[7], but while the mortality does not seem excessive for an operation of such severity, a sufficient interval has hardly elapsed to enable us to judge of the permanency of cure.

REFERENCES.—[1]"Lancet," Mch. 17, 1894; [2]"Rif. Med.," Nov. 7, 1893; [3]"Il Policlinico," Nov. 15, 1894; [4]"Boston Med. and Surg. Journ.," Nov. 1, 1894; [5]"Trans. Philadelphia Med. Soc.," 1894; [6]"John Hopkins Hosp. Bull.," Oct., 1894; [7]"Australian Med. Journ.," Oct., 1893.

NEURASTHENIA. (See also "Nervous Disorders of Women.")

Synopsis.—(Vol. 1895, pp. 30, 51 and 381.) **Glycero-phosphates of Calcium, Sodium, Potassium**, etc., alone or in combination, given by mouth or subcutaneously, as general nutrient. Fluid extract of **Sumbul**, 5 to 30 minims, as nerve tonic. Grasset advises *for slight forms* plenty of nourishing food, no mental work, bodily outdoor exercise short of fatigue, cold horizontal **Douche** every morning for twenty or thirty seconds, omitting the head, then dry friction and walking. Submersion in **Cold Bath**, if douche is not available. General **Massage** before dinner. Use the following two formulæ, changing them so that twenty days' treatment shall be followed by ten days' rest each month: (*a*) ℞ Alcoholic Extract Kola, 10·02; Syr. Aurantii, 300 c.m. *Sig.*—1 tablespoonful with every meal. Or: ℞ Tinct. Kola, Tinct. Coca, āā 50 c.m.; Acid Citrate, 1·0; Sod. Arsenici, 0·05; M. *Sig.*—Take 1 teaspoonful. (*b*) Take with each meal a powder of **Ferr. Redact.**, 0·10, and a tablespoonful of: ℞ Acid. Hydrochlor., 1·0; Aq. 300·00. In spring and autumn, treatment for six weeks at a Hydropathic Establishment. In *serious forms* removal from surroundings, and best into a Hydropathic Establishment under continual observation. Absolute mental and physical rest. Exercise in open air. Methodical and passive **Massage**. Cautious **Electrotherapy**. Later, short cold immersions, followed by rest in bed, then short cold douches. Progressive overnutrition, beginning with milk, then eggs, minced raw meat; later, twice a day a teaspoonful of: ℞ Strych. Sulph., 0·5; Aq., 150·0. As strength increases give medication advised above for slight forms. When strong enough short voyages are useful. Dyspepsia must be treated. *Brown-Sequard's treatment.*—Suspend all other treatment, and give by subcutaneous injection under asepsis 2 c.m. of equal parts **Testicular Fluid** and **Distilled Water**, increasing dose daily 1 c.m. until 5 or 6 c.m. are given; continue for twenty days, then rest ten, and then recommence for twenty days. If subcutaneous injections are objectionable, inject into rectum 1 to 2 c.m. testicular fluid and 4 or 5 distilled water, adopting the same times, unless bowels are irritated. *Artificial Serum treatment.*—In cases of tachycardia, embryocardia, etc., two to four times daily injection of the following: ℞ Sod. Phosph., 10·0; Sod. Sulph., 5·0; Sod. Chlor., 25·0; Ac. Carbol., 0·5; Aq. dest. (boiled), q.s. ut. ft. 100 c.m. Neurasthenic dyspepsia is cured by reasonable diet and abstinence from alcohol; employment is regulated, especially in forenoon, and sleep is thus secured without hypnotics. Rest treatment in obstinate cases.

NEURITIS (Multiple). *Græme M. Hammond, M.D., New York.*

TREATMENT.—Dr. E. Leyden,[1] after considering the prophylatic treatment, such as the avoidance of too early exertions after convalescence from acute diseases, the abstinence from alcohol, the avoid-

ance of lead poisoning, and the importance of an anti-diabetic diet, condemns the specific treatment by mercury, and calls attention to the occasional benefit of the **Salicylic Preparations** and **Potassium Iodide** He considers the anodyne remedies of more importance, viz., **Antipyrin, Phenacetin, Exalgin, Euphorine,** and of late **Methylene-blue.** In cases in which the pain is very severe **Morphine** should be administered subcutaneously, or chloral, or sulphonal may be given *per os.* **Massage** and **Baths** in the later stage are recommended. **Strychnine** is spoken favourably of in the paralytic stage. It is better to give it subcutaneously in doses varying from $\frac{1}{64}$ to $\frac{3}{64}$ of a grain twice daily.

The writer[2] has recently reported an epidemic of multiple neuritis in infants in the city of Bridgeport, Conn. The ages of the patients varied from three months to four years. All recovered except one. The paralysis accompanied by pain, affected principally the legs, but in several cases one or both arms were paralyzed. The paralysis was usually preceded by fever and vomiting, and was accompanied by loss of the reflexes, electrical degenerative reactions, and tenderness over the nerve trunks.

REFERENCES.—[1] "Berlin. klin. Wochen.," 1894; [2] Hammond, "Med. Record," Nov. 9, 1895.

NEURITIS AND TABES. *Græme M. Hammond, M.D., New York.*

Edinger's[1] theory of the cause of neuritis and tabes is interesting, though not particularly original. It is important in that it embraces the modern views in regard to these subjects. His arguments are forcible and concise, and are founded upon the following laws :—

(1,) The exercise of the function of an organ causes in it molecular changes. The organ suffers a certain damage which must be repaired. When this repair adequately supplies the loss, the organ is strengthened, otherwise it undergoes retrogressive changes.

(2,) A damaged or weakened tissue soon decays, and makes place for the surrounding tissue, which gradually takes its place. What has heretofore been termed proliferation, hypertrophy, interstitial inflammation, etc., has been proved by Weigert to be only an ingrowth of healthy tissue into diseased tissue.

In the so-called gray atrophies of the central nervous system, the cardinal tissue is always first diseased, after which, this weakened tissue becomes proliferated and disorganized. It is then destroyed, and the neuroglia takes its place. This over-growth of the neighbouring tissues cannot but damage the whole organ. The over-growth of interstitial tissue, caused by decay of the motor fibres in nerves, also damages the sensory fibres contained in the nerve.

The first important point observed is the disintegration and distinction of the nerve elements. This morbid change is augmented by the extra amount of labour forced upon association systems. Regeneration becomes impossible, and degeneration results, which is usually progressive, more or less rapidly, according to the extent of the over-taxation, deficient nutrition, and cessation of function of the nerve elements.

REFERENCES.—[1] "Journ. Nerv. and Ment. Diseases," Jan., 1895.

NOSE (Accessory Sinuses of the).

P. Watson Williams, M.D., Bristol.

Empyema of the Antrum of Highmore.—Symptoms.—Burger[1] reminds us that the nasal wall of the antrum is the thinnest of its walls, and that consequently, inspection of the nasal cavity, and not the mere palpation of the face is the essential part in the diagnosis of enclosed empyema, an evident distension of the canine fossa being by no means a common symptom as is generally supposed, and its presence indicates that something more than an empyema is present, perhaps a neoplasm. Unilateral discharge of fœtid pus, coupled with former toothache in carious upper molar and pain in and around the eye and over the frontal sinuses, generally points to antral empyema. A nibbling, boring pain, tenderness, and a sense of distension over the maxilla, are additional symptoms. Yet these must not be overestimated, for infra-orbital neuralgia, together with unilateral purulent discharge, occurs with empyema of the frontal and ethmoidal sinuses, and may be absent in antral disease. Cerebral symptoms—headache, lachrymation, disturbances of taste, smell, and hearing, spasmodic sneezing, and various reflex nasal neuroses may or may not be present. Further, the pus may reach the pharynx and larynx and set up secondary inflammation, coughing, etc. The swelling of mucosa may reach the Eustachian tube and originate deafness, tinnitus, etc. Fever may be present, especially if the *ostium* is temporarily occluded, while the anæmia, emaciation, and mental depression, which usually attend all chronic suppurative processes, are not wanting in this disease. Distension of the canine fossa is rarely present, it being usually the result of a progressive periostitis from a carious tooth, which may have set up empyema simultaneously; exophthalmos from pressure is likewise rare, but abscesses of the face and within the orbit and the various forms of inflammation of the eye are not uncommon, while swelling of the cheek, upper lip, and oral mucosa are relatively frequent, and these swellings are sensitive on pressure, and are usually the result of temporary occlusion of the ostium. The discharge of pus

is generally more profuse in the morning, and from the position of the patient on his back in sleep may be continuous.

In half his cases, Hartmann[2] observed lateral distension of the antral wall, forming a bony swelling above the middle meatus. This bony swelling must be distinguished from the lateral tumour of mucous membrane above the inferior turbinal described by Kaufmann as pathognomonic of the disease, and which is identical in structure with polypoid hyperplasia of the mucosa, and due probably to disturbances in circulation and nutrition, and not to irritation of secretion. Burger has never seen this swelling of Kaufmann,[3] but often a swelling near the *hiatus*. If the pus is always found beneath the middle turbinal, never on the convexity of this bone, it argues against the involvement of the ethmoidal or spheroidal sinuses, but beneath the middle turbinal are the openings of the frontal sinus and anterior ethmoidal cells.

It is not uncommon to find one or more mucous polypi about the ostium caused by the suppuration, but the most frequent secondary change in the nose is a swelling of the mucous membrane, or the mucous membrane may be atrophic, though Burger has never observed ozæna, and he cannot substantiate Grünwald's observations. Trans-illumination is trustworthy in the majority of cases in which the face remains dark on one side; especially valuable is the trans-illumination of the eye, and the subjective sensation of light in the sound side only. Puncture and irrigation are also valuable methods of diagnosis.

Burger[4] records two cases in which purulent rhinitis on one side had apparently caused, by posterior transfer of products while the patient was on his back at night, antral empyema of the opposite side.

Le Fevre[5] has seen a case in which the patient complained only of occipital headache, which came on with symptoms of purulent discharge from the nose, the headache disappearing as soon as the antrum was freely opened.

J. D. Bryant[6] has known two cases in which the only symptom was marked supra-orbital neuralgia without nasal discharge, the first being relieved permanently, and the second only temporarily by the evacuation of the antrum.

TREATMENT.—There is nothing new to add as regards methods of treatment, but it is useful to note Garel's[7] results by treatment through the nasal openings, especially through the *ostium*. Any practitioner who cares to proceed methodically will convince himself that the ostium maxillare is not so difficult to discover when we are provided with a catheter of suitable curvature and calibre. He has treated forty patients affected with empyema in the maxillary sinus.

In four cases the lesion was bilateral, which brings the total number of sinuses treated up to forty-four. He has been able to reach the sinus by the natural orifice twenty-eight times, that is to say, in a proportion of 63 per cent. o the cases treated. In six only had he to resort to another method, the empyema resisting a short series of irrigations. It has thus been necessary to practise puncture through the inferior meatus by means of Krause's trocar, to enable the patient to irrigate for himself during several months. There remain, therefore, twenty-two cases treated and cured exclusively by the natural orifice. In two cases, nevertheless, he is unable to affirm absolute cure, having omitted to mention the result of treatment in our case papers. Recovery has always been rapid, as the treatment has lasted on an average less than eight days, with one irrigation a day. In three cases only it lasted fifteen days, and in one twenty-one. On the other hand, he has obtained five cures in three and four days. He has been obliged to renounce the natural orifice six times, because irrigation was not sufficient, as in other cases, to put an end to the purulent secretion in eight or ten days. Therefore, out of these six cases, five could not be cured in spite of numerous irrigations practised.

There exist two kinds of empyema—those which heal rapidly, and those which resist all attempts by irrigation. These last are those in which there probably exist granulations requiring curetting before the disappearance of the suppuration is brought about. On the other hand, he affirms that it is absolutely useless to try to penetrate the sinus by the most dependent part, because the cases which have resisted irrigation by the natural orifice have resisted it equally when practised through an artificial opening made in the inferior meatus. It is a mistake to think that the sinus cannot be thoroughly washed through the natural orifice.

On the whole, he maintains that in the presence of an empyema of the antrum we ought always to try in the first instance irrigation by the natural orifice.

There are, however, rare cases in which the natural orifice is inaccessible, and then he drills the inferior meatus, or enters by galvano-cautery puncture. The one case he opened through the canine fossa did not give a good result from packing with iodoform gauze (Chiari's method).

A case of alarming hæmorrhage following the opening of the antrum by a drill through the socket of the first molar tooth, is reported by Scheppegrell.[8] The hæmorrhage recurred each time the iodoform gauze packing was removed, even as late as a fortnight

after the operation. It is a very rare occurrence, and the only instance he can find recorded.

J. N. Mackenzie notices Freeman's modification of the Krause and Mickulicz method of entering through the inferior meatus. Freeman enters through the outer wall close to the floor and just below the nasal duct, as near the vestibule as possible, where the antral wall is thin, using a trocar and cannula, which latter is left *in situ* for subsequent irrigations. The great advantage of the method is that the opening is accessible to the patient. But Mackenzie himself prefers the alveolar operation for treatment.

Frontal Sinus Disease.—Frank and Kunz[9] find that in the past fifteen years, only ninety-five cases of disease of the frontal sinuses have been reported, distributed thus : Mucocele, twenty-four ; abscess, fifty-one cases, three of them being double ; fracture, one ; foreign body, one ; injury, one ; exostosis, one ; osteoma, seven ; tumours, three ; cholesteatoma, one ; polypi, two ; periostitis, one ; cyst, two. They report a case of tuberculosis of the sinus, and also give references to the literature of the ninety-five cases.

Abscess.—Müller[10] states that almost all of the ten cases of abscess of the frontal sinus coming under his notice were consequent on influenza. He gives as a point of differential diagnosis between sinus abscess and abscess of upper part of the orbit, that in the former ptosis is always well marked at the very onset, while the swelling of the lids is less so, but in orbital abscess the ptosis is always in proportion to the swelling of the lids. Krecke[11] relates three cases; two were cured by operation, the third died from secondary abscess in the frontal lobe and meningitis. Jansen[12] has generally found the ethmoid affected in the seven cases of frontal sinus operated on by him ; he therefore opens also the ethmoidal cells by removing the orbital and nasal inferior wall. Swellings in the anterior superior portion of the middle turbinated are important indications for diagnosis of frontal sinus empyema ; still more important is palpation of the inferior lateral wall of the sinus ; flattening of the curvature of the inner upper angle of the orbit, with tenderness, point to empyema of the frontal sinus.

Wunkler[13] has found from experiment in thirty-three corpses that he could trephine the sinus frontalis thirty-five times only in the sixty-six sinuses, from the inner side of the middle turbinated, the size of the sinus varying considerably. In men, scarcely one-sixth of the cases could be probed through the nose ; in women, one-fourth ; in five, injury to the ethmoidal cells was found after trephining.

Mayo Collier deprecates opening through the upper inner angle of the orbit, and has had much better results from his method of making

a vertical incision in the median line, then putting in a small trephine, thus enabling one to see both sides; but the important thing, of course, is to make a communication with the nose by means of a bent probe.

REFERENCES.—[1] Editorial on Burger's Monograph, "Sammlung klin. Vort.," 1894, No. 3, in "Annals of Surg.," March, 1895; [2] "Deut. med. Woch.," 1889, No. 10, p. 190; [3] "Monat. f. Ohren.," 1890, Nos. 1-8; [4] "Rev. de Lar., d'Ot.," 1894, No. 1; [5] "New York Med. Journ.," March 23, 1895; [6] Ibid., [7] "Journ. of Lar.," Oct., 1894; [8] Ibid., Sept., 1895; [9] "New York Med. Record," Nov. 3, 1894; [10] "Med. Week.," Dec. 7, 1894; [11] "Munch. med. Woch.," 1894, No. 51; [12] "Arch. f. Lar.," 1893, Bd.1, Hft., 2; [13] Ibid., [14] "Journ. of Lar.," Dec., 1894.

NOSE (Affections of).

Synopsis.—(Vol. 1895, p. 37.) **Naphtholate of Sodium** a valuable antiseptic, applied in ·5 to 2% solution or weak ointment.

NOSE (Micro-Organisms in the Healthy).

P. Watson Williams, M.D., Bristol.

St. Clair Thomson and Hewlett[1] have carefully investigated the question of micro-organisms to be found in the healthy nasal mucosa; since about 500 litres of air, bearing on an average one thousand five hundred organisms, are inhaled every hour. It is very generally believed that the nose must therefore show a rich profusion of micro-organisms. But the examination of thirteen individuals, from the vestibules of whom, twenty-seven cultures and fourteen cover-glass preparations, and from the mucous membrane of the nasal cavity, seventy-six cultures and thirty cover-glass preparations, showed that while the skin and vibrissæ of the vestibule contained numerous microbes, they were rarely present on the mucous membrane (in 80 per cent. of their observations the mucus was completely sterile). On the Schneiderian membrane, the occurrence of micro-organisms is so infrequent that their presence must be regarded as quite exceptional. This bears out clinical experience, and the fact that the mucus must be either bactericidal or, at least, a bad nutrient medium, is corroborated by experiments carried out in respect of vaginal mucus.

Scheff[2] has shown by experiments on the cadaver that the air-stream in respiration passes especially through the middle nasal channels.

J. Wright[3] has found numerous pathogenic organisms in apparently healthy noses, and cites Besser's and Delletti's observations, which corroborate his own.

REFERENCES.—[1] "Medico. Chir. Trans.," vol. lxxviii.; [2] "Ann. des Malade l'Or.," Feb., 1894, and "Journ. of Laryng.," Feb., 1895; [3] "Annals of Opthal. and Otol.," April, 1894.

NOSE (Tuberculosis of the). *P. Watson Williams, M.D., Bristol.*

Tuberculous disease of the nose is very rare. Rice[1] cites the fact that in four hundred and seventy-six autopsies, Williglk found one case only, and states that it may occur either as an ulceration on the nasal septum and floor, and resembling tuberculous ulcerations in general, or as small papillary growths attached to the turbinated tissues. In any case of chronic ulceration in a patient with pulmonary disease, we should be suspicious if the nasal condition resists the effect of the iodide of potassium.

Strauss[2] has shown that crusts and mucosities of the nasal fossæ of healthy persons brought into contact with tuberculous patients, may contain tubercle bacilli and septic germs. Chiari[3] reports six cases under his care. He says that it is a rare affection, seeing that between 1889-93 he only observed six cases out of about six thousand patients. Generally, an ulcer first appears, from whose edges there rapidly arise granulations that soon became confluent. The tuberculoma is red, covered with mucus or crusts, with irregular, bleeding surface, and fairly soft. There is no pain. Later, it may lead to perforation of the septum. Altogether, there were only twenty-one recorded cases; in twelve one must assume auto-infection, and in nine the infection must have come from without; in eighteen the septum was the part affected. Prognosis, as far as life is concerned, is favourable. In differential diagnosis one must consider osteoma, enchondroma, spurs, myxoma, fibroma, rhinoscleroma, gumma, sarcoma, and lupus.

Brockeart[4] reports two cases in females, aged eighteen and nineteen. In both, the ulceration was on the septum, but in one on the inferior turbinal. Bacilli of tubercle were found in both cases, and in both the lungs were involved. Herzog[5] has recorded ten new cases, and tabulates eighty cases. He finds that one of the most important complications by continuity is that with tuberculosis of the naso-lachrymal duct and the conjunctiva, it may be complicated with tuberculosis of the pharynx, palate, tongue, skin, lupus of the nose, tuberculosis of the cervical glands, etc. Lupus of the face, or of the nasal mucous membrane, may lead to tuberculosis of the latter; it occurs in the form of ulcerations, tumours, or a combination of both.

REFERENCES.—[1] "New York Med. Rec.," July 20, 1895; [2] "Bull. Acad. de Med.," July 3, 1894, "Journ. of Lar.," Dec., 1894; [3] "Arch. f. Lar.," 1893, Bd. 1, Hft. 2, "Journ. of Lar.," Dec., 1894; [4] "Rev. Int. de Rhin.," iv., 1894, "Annals. Med. Surg. Bull.," March 1, 1895; [5] "Amer. Journ. of Med. Sci.," Dec., 1893.

ŒDEMA (Angio-neurotic).

Synopsis.—(Vol. 1895, p. 385.) Generally Arsenic, Ergot and Bromide of Iron, *e.g.*: ℞ Acidi Arseniosi, gr. $\frac{1}{60}$; Ergotini, gr. j; Pilulæ Ferri Bromidi, grs. 4; Ft. pil. Tales 48. *Sig.*—1 t. i. d. post cib. The bromide pill is after the formula for the ferri iodide pill (B.P.).

OPERATIONS. *Priestley Leech, M.D., F.R.C.S.*

The Importance of Maintaining Bodily Heat during Operations.—In an editorial attention is drawn to this subject, the importance of which is often overlooked by surgeons. Many patients not only seem to be cold as they recover from the anæsthetic, but actually complain of being cold. In some instances, the surgeon regards this chilly sensation as an indication of nervous shock, but in the majority of instances it is simply due to excessive loss of bodily heat. The writer also believes that many cases of post-anæsthetic bronchitis or other inflammations of the respiratory tract are directly produced or greatly increased in severity by neglect to maintain the temperature during operation. He says it is interesting to note that one of the ablest experimenters upon the function of the cerebral cortex always has his monkeys carefully covered and lying on a hot water bed while he is operating upon them, while the patients upon whom he operates do not have the heat applied to them until the operation is over. It is doubtful whether a continually maintained subnormal temperature could be borne without producing collapse and congestion of vital organs, which would ultimately result fatally.

This position is borne out by some observations made by Angelesco in Professor Chaput's service (quoted in the "Journal of the American Medical Association.").

The conclusions at which he arrives, are as follows: (1,) The temperature is lowered during the whole of the anæsthesia; (2,) This lowering presents a much more pronounced oscillation at the beginning of the anæsthesia; in the first hour the decrease varies between 2 and 2·5 degrees; (3,) The decrease continues slightly during the profound sleep following anæsthesia; (4,) After waking, the temperature rises, following an inverse curve to the first. Besides all other causes producing lowered temperature after anæsthesia, the author thinks that the diminished temperature, lower with ether than with chloroform, points to a very marked vaso-dilatation in the former case.

REFERENCE.—"Therap. Gaz.," Feb. 15, 1895.

OPHTHALMIA NEONATORUM. (See "Eye, Diseases of.")

OPHTHALMITIS (Sympathetic). (See "Eye, Diseases of.")

ORTHOPÆDICS.

Robert Jones, F.R.C.S., Liverpool.
John Ridlon, M.A., M.D., Chicago.

By the term talipes, or club-foot, we mean all distortions of the foot, whether in the direction of flexion or extension, inversion or eversion, and whether congenital or acquired. In this paper, however, we will content ourselves by discussing the congenital varieties, and postpone the consideration of the acquired forms until we come to deal with the surgical management of paralysis.

For purposes of illustration we will describe the varieties under the headings of *Talipes equinus*, *Talipes calcaneus*, *Talipes calcaneo-valgus*, and *Talipes equino-varus*. Of these, the last named is of by far the greatest clinical importance.

Congenital talipes equinus of pure type, that is to say, without associated lateral deviation, the foot being simply extended on the leg, is of rare occurrence.

The principles of treatment are the same as will be mentioned when we deal with equino-varus.

Congenital talipes calcaneus, when not associated with valgus, is also uncommon. The dorsum of the foot is here approximated to the shin, and the heel alone touches the ground in walking. It is of all varieties the easiest to treat, and runs a very rapid course to complete recovery. Treatment should be commenced the moment the child is born, and should merely consist in the application of a rectangular splint, re-adjusted every night and morning. Treatment should be started equally early if the calcaneous deformity be complicated by some valgus, and should consist in manipulation by the nurse, who should endeavour frequently during the day to stretch the contracted tendons by placing the foot in the normal position. In this variety of talipes the simplest treatment often suffices, and severe mechanical measures are rarely acquired. With regard to this, one may mention the value of appropriate bandaging. If the surgeon desires to turn the foot in, he should start the bandage on the outside of the foot; if a varus is attacked, the bandage should start on the inside (*Figs. G, H, Plate XI*). The mechanical assistance which one receives from a bandage is rarely appreciated; any foot which can be easily manipulated into position can be kept in that position with a very few turns of bandage. Should the case be more obstinate a splint may be placed, made of felt-padded sheet iron, and applied so that pressure be put upon the lower part of the leg and on the outer side of the dorsum of the foot. Treatment rarely lasts six weeks, and there is no tendency to relapse. This variety, which is described as congenital talipes calcaneo-valgus, is found more frequently than either of the

PLATE XI.

Fig. A.

Fig. B.

Fig. C.

Fig. D.

Fig. E.

Fig. F.

Fig. G.

Fig. H.

Fig. J.

already mentioned varieties, but far less frequently than the opposite lateral deformity, viz., equino-varus. From such statistics as are at hand, the ratio of valgus to varus is about one to sixteen. One of the authors is accustomed to use Judson's splint in preference to others devised to correct calcaneo-valgus. It consists of a footpiece of sheet steel to which is riveted a legpiece forged from a bar of soft steel, with retention straps placed where necessary. It is, of course, applied to the outer side of the foot. It is simple in construction, comparatively inexpensive, rarely breaks or gets out of order, and fulfils every indication.

Congenital talipes equino-varus, or simple talipes varus, as it is often called by the older writers, is the variety usually met with. Its etiology is still shrouded in obscurity, and though various theories have been advanced, no one of them has been received by the profession with anything like unanimity, or appears to account for even a majority of the cases met with. We may, however, dwell for a moment upon the anatomy of varus, inasmuch as in electing the plan of treatment to be carried out, we must, especially in the older cases, have regard to the anatomical changes.

In the first place it must be remembered that no two normal feet are in every respect alike, and we must not expect that any two deformed feet will be counterparts either in the degree of distortion or the anatomical deviation from the normal.

We know, however, that the normal foot can be placed in the equino-varus position by contraction of (*a*,) Extensors of the ankle, gastrocnemius and soleus, the latter to a smaller degree, also the tibialis posticus, flexor longus digitorum, and flexor longus pollicis ; (*b*,) Invertors of the foot, tibialis anticus, tibialis posticus (powerfully), and the muscles going into the sole behind the internal malleolus.

The sole muscles, particularly the abductor pollicis and flexor brevis digitorum, will also be found to assist in the production of an extreme case. Certain *mild cases* suggest only muscular over-action, the deformity disappearing under chloroform.

When the case is more severe, attempts at reduction are resisted by firm structures, only yielding slowly to great force produced by the hand or the wrench, and giving one the sensation of resisting ligaments. These must be the internal lateral ligament of the ankle joint, the superior astragalo-scaphoid, the naviculo-cuneiform, and the inferior calcaneo-scaphoid ligaments, which are found shortened.

In more advanced cases, the bones of the foot become altered by pressure on soft growing bone, limiting its growth, while the portion not pressed upon slowly develops, but never at the rate it ought to

do, on account of the lack of the stimulus of normal walking movements, so that an advanced talipedic foot will always be stunted. Marked inward rotation of the foot at the medio-tarsal joints carries the scaphoid so far inwards that a new facet may be formed on the inner side of the astragalus, which in almost all the bones becomes shortened, and its facets necessarily modified. In time, the neck of the astragalus also becomes altered, the head turning inwards, so that a line bisecting the tibial facet will, if prolonged forwards, entirely miss the articulating surface on the head.

The soft structures and tendons keep pace with the undersized development of the foot, so that those on the inner and under surfaces of the sole are distinctly too short when the foot is stretched out, and consequently may require division. In these advanced casés, most surgeons believe bone operations to be essential.

With this brief consideration of the anatomy, we come to a consideration of the treatment. Two questions of no little importance always arise in the consideration of a case of club-foot. "When shall the treatment commence?" and, "When shall the treatment end?" The treatment should commence at once. The practitioner who delivers a talipedic child, should commence the treatment of the deformed foot as soon as he sees it. The treatment should not end until the deformity has been permanently corrected.

Three general plans are employed namely: (1,) Treatment by retention or continuous leverage; (2,) By intermittent stretching and continuous retention; (3,) By operative procedure.

Whichever plan be employed, it must in all cases be supplemented by retention appliances for a longer or shorter time. Simpler means are always to be tried before the more radical operations are attempted, but the tendency of the profession is decidedly in favour of rapid correction in place of gradual and prolonged stretching by complicated mechanical devices.

Forcible correction is accomplished by twisting with the hand in moderately severe cases in young infants, and by wrenching and crushing with various machines in more advanced cases. The simplest, effective machine is the Thomas wrench *(Figs. A, B, C, Plate XII).* It may be used alone, or secondary to an operation.

When used as supplementary to a cutting operation the patient is anæsthetised, and attempts are made to fully correct the deformity at one sitting. One of the most powerful devices for forcible correction is Phelp's machine, which is used only when the patient is anæsthetised, and generally, if not always, as a supplementary aid to a cutting operation. Forcible corrections by machinery should not be

attempted in cases where correction can be accomplished by the hand, which may be employed with equal advantage after subcutaneous or open incisions of the soft parts, or after cutting operations on the bones.

The choice between subcutaneous and open incisions for the division of soft parts depends upon the skill of the operator, the severity of the deformity, and the care with which strict asepsis can be carried out. It requires more manipulative skill to thoroughly divide all the shortened parts subcutaneously than by the open method, and in some cases a satisfactory subcutaneous division cannot be accomplished. An infected open wound is certainly a safer wound than an infected subcutaneous one. On the other hand, subcutaneous incisions, to which no thought has been paid beyond ordinary cleanliness, rarely become infected; it is, indeed, the universal rule that they heal without suppuration; while open incisions rarely escape infection unless treated with the most scrupulous antiseptic precautions at the time of operation and at subsequent dressings, should these be necessary. Strict asepsis requires no little personal care for the preparation of dressings in private practice, for which the services of at least one trusty assistant will be needed. Strict asepsis, it must be admitted, is not possible for very many men who are called upon to treat deformed feet. We do not say that in the hands of such the subcutaneous operation is absolutely without risk, for it is not; but it is reasonably safe, and, if successful, will result in healing within three or four days, as against as many weeks should the wound be obliged to heal by granulation.

Intermittent forced stretching is accomplished by various mechanical means, the principle being to apply to the deformed foot some sort of mechanical device, shoe or splint, so arranged that by key or lever the foot can be stretched towards the normal, held there a few seconds, and fixed for a period in an improved position. This is frequently repeated, in some instances even twice a day. Of course, much more pressure can be borne for a short than for a long time, and the treatment aims at carrying the instantaneous intermittent stretching up to the point of toleration, and then relaxing the tension to such a degree that the skin will bear the pressure of continuous retention in an improved position. A well known implement employed in this plan of treatment is that of Dr. Shaffer, of New York, who first attacks the lateral displacement with the foot in full extension, and, applying a splint either to the inner or outer surface of the leg and foot, straps it in place, and then, by an arrangement of ratchets or endless screws, stretches the foot in the direction of abduction

and eversion. When the lateral deformities have been overcome, he applies a so-called extension shoe which acts by a screw, so arranged as to stretch the muscles associated with the tendo-Achillis. In this, as in the splint for the latter deformity, the endeavour is to stretch the foot up to the point of toleration at intervals, retaining it, meantime, in as improved a position as can with comfort be borne.

A simpler, less expensive, and much more effective way is that by the wrench (*Fig.* 33), introduced by the late Mr. H. O. Thomas, an implement which materially adds to our capacity for grappling with all varieties of congenital club-foot.

Fig. 33.

The use of the Thomas' wrench, which is but little understood in this country, will be fully described later on.

Tenotomy.—Some years ago tenotomy consisted of a series of operations, the aim being to correct the lateral deformity before attacking the antero-posterior; and tendons, after being divided, were left *in situ* for two or three days, until soft union had taken place between the divided ends. The effort was then made to stretch this soft new tissue sufficiently to correct the distortion, and if this were not possible, to do another tenotomy after the lateral deformity had been well corrected; the antero-posterior deformity was attacked by dividing the tendo-Achillis. This procedure is still practised by some of the older surgeons, but modern surgeons generally endeavour to place the foot in position immediately after tenotomy has been performed.

We will refer later to the methods we adopt in order to divide the tendo-Achillis. The seat of election should be well above the heel, in order to avoid its fan-like expansion; in the case of a baby, about three-quarters of an inch above its insertion; in that of an adult about one and a half inch. The tenotome (*Fig.* 34) should be introduced close to the inner side of the tendon in order to avoid the posterior tibial artery.

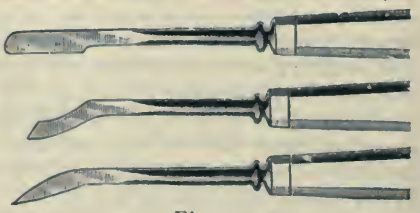


Fig. 34.

The *tibialis anticus* muscle is seen prominent immediately the foot is abducted, and it should be divided about half an inch to an inch above

Fig. A.

Fig. B.

Fig. C.

Fig. D.

Fig. E.

Fig. F.

Fig. G

Fig. H

its insertion into the internal cuneiform at a point below the level of its synovial sheath. The tendon has the dorsalis pedis on its outer side, but separated from it by the tendon of the extensor proprius hallucis. The tenotome should therefore enter from the outer side.

More care is required in dividing the tibialis posticus, by reason of its close proximity to important structures. In the adult it is usually divided two inches above the inner malleolus, where it lies in apposition to the inner tibial margin. This is at a point just above the synovial sheath, and where the artery is not so close to it as it is lower down. The incision should not be made too near the malleolus, lest the internal saphena vein and nerve be cut. If the plantar fascia is to be divided, it should be attacked at its most prominent point. The knife is entered on the inner aspect of the sole, and while the fascia is held on the stretch it may be cut from within or without.

Messrs. Parker and Shattock, recognizing the fact that the contracted ligaments are largely responsible for the deformity in club-foot, strongly urge their more general and systematic division. This operation they term syndestotomy. The two tibials are the tendons most frequently divided, and they should be attacked simultaneously with the ligaments with which they are closely connected, and this is best done at or near their insertions, where they spread out as fibrous expansions closely blended with the capsular ligaments connecting the head of the astragalus with the scaphoid, the scaphoid with the internal cuneiform, and the cuneiform with the base of the first metatarsal bone ; these joints, they consider, are much approximated by the incurvation of the inner border of the foot.

Tarsoclasis has been strongly advocated by Grattan, of Cork, who has published a large number of successful cases. Grattan uses his osteoclast for tarsoclasis in the following manner: By means of the side screws the opposing bars are fixed at the desired distance, which for young children, is one and a quarter to one and a half inches apart. The levers attached to the large screw by which pressure is applied, are reversed, and the central pressure bar withdrawn, so that the foot can easily be placed between the bars. The os calcis and the concave surface of the tarsus are held between the opposing bars, when, on the levers being turned, the central pressure bears on the convex surface of the tarsus. The screw is forcibly turned until the tarsus is crushed and bent, so that the foot presents the form of an aggravated flat foot. This process is repeated two or more times until all resistance ceases, or until the tarsus has been fractured.

Leaving the mechanical and instrumental methods of dealing with

club-foot, we would draw attention to operative procedures known as "open incision," which have found considerable favour at the hands of Continental surgeons.

Fig F, Plate XII.—We are indebted to Phelps for this operation. It consists in making an open incision, commencing in front of the inner malleolus and extending for one third the distance across the sole of the foot and down to the neck of the astragalus on its inner side. Through this wound the abductor pollicis, tibialis posticus, the plantar fascia, the flexor brevis, the long flexor tendon of the toes, and the deltoid ligament may, if necessary, be completely divided. This is done after subcutaneous tenotomy of the tendo-Achillis has been performed. Great force is then used by Phelps' osteoclast to rupture the deep ligaments and super-correct the foot. Any case that can be corrected by the hand or by subcutaneous tenotomy should not be subjected to open incision, and when the operation, as described, fails to super-correct the foot, a linear-osteotomy should be made through the neck of the astragalus. If this fails, a V-shaped piece should be removed from the os calcis, the point of the V meeting the astragaloid line of osteotomy. This failing, the removal of the scaphoid and cuboid is indicated, and, as a last resort, Phelps would recommend a Pirogoff.

The wounds in a Phelps' operation may be sutured or not, in accordance with the possibilities. The foot should be dressed without drainage, with the aim of attaining blood-clot organization, and is to be fixed in the super-corrected position by a plaster of Paris bandage. Phelps' first operation was in 1879.

Ridlon's operation *(Fig. F, Plate XII)* is a modification of that of Phelps, and was originally devised to avoid a tender scar on the sole of the foot. In Phelps' earlier operations the incision was carried two-thirds across the sole of the foot; at present it is carried but one-third that distance, and the objection to a tender scar holds less now than before the modified operation was devised.

It consists in an incision commencing on the dorsum of the foot just in front of the inner malleolus at the point where the tendon of the extensor longus digitorum muscle crosses to the inner side of the foot; from there it is carried directly across the sole to meet near its middle a second incision made parallel with the sole from near the inner tuberosity of the os calcis to the middle of the first metatarsal bone, or beyond the plane of the first incision which leads directly downwards to the bones; the plane of the second incision slopes upwards and outwards to reach the bones at their nearest borders; thence it is carried underneath the bones to which it is closely

applied. As these incisions are made, an assistant constantly keeps the parts on the stretch in the direction of the correction of the deformity, and each part, as it appears to resist the correcting influence, is divided. When any considerable degree of equinus is present, the first incision passes beneath the anterior half of the inner malleolus, and, in some cases, beneath the whole of it. The deltoid ligament, and the tendons of the tibialis anticus, extensor proprius hallucis, extensor longus digitorum, extensor brevis digitorum, tibialis posticus, flexor longus digitorum and flexor longus hallucis, are readily reached. From the second incision, the abductor hallucis, the plantar fascia and any other resisting structure, may be divided. By carrying the second incision in the plane indicated it is almost always possible to avoid wounding the internal plantar artery and nerve. The division of all tight bands having been made, the foot is over-corrected by the hand or wrench. As in Phelps' operation, Ridlon believes it better to divide the tendo-Achillis and correct the equinus, rupturing, if necessary, the posterior ligament of the ankle joint before commencing the operation for correcting the deformity of the anterior portion of the foot. The dressings are the same as in a Phelps', *i.e.*, suturing when possible, covering the wound with aseptic dressings, and retaining the foot in a super-corrected position by means of plaster of Paris. In inveterate cases, where the foot cannot easily be held in the super-corrected position, operations on the bone are indicated, as in a Phelps' operation.

Little first suggested tarsectomy as an appropriate remedy for advanced talipes, and Solly was the first to carry out the suggestion. Failure checked the enthusiasm of surgeons until Lund practised the exsection of the astragalus.

This operation, which justly continues to hold a favoured position with surgeons, is performed in the following manner: A longitudinal incision is made just over the most projecting part of the head of the astragalus, parallel to the antero-posterior axis of the foot, guiding it between the line of the outermost tendon of the extensor longus digitorum and the tendon of the peroneus tertius. The incision being of sufficient depth, and about one and a half inches in length, Mr. Lund expected at once to come down to the cartilaginous surface of the head of the astragalus, but here he met with an unexpected difficulty. The dorsal astragalo-scaphoid ligaments, which he had divided, were so much thickened, so white and firm in structure, and so closely pressed to the bone, that it was nearly impossible to be certain whether or not all the fibres were

divided, and the head of the bone fully exposed. This, however, being done, Mr. Lund tried with a gouge to raise the bone while the scaphoid and the front parts of the foot were bent backwards, and in doing this he cut off a thin piece of the edge of the cup of the scaphoid. There was so little space between the bones for the passage of the instrument that it cut into the soft young bone. The same accident occurred when Mr. Lund used the gouge between the external malleolus and the side of the astragalus ; for here, again, for want of space, he detached, unwittingly, a slice of the inner side of the malleolus, as the preparation will show.

Fortunately he had provided himself with a small, strong, curved hook, fixed in a stout handle, and having on its concavity a cutting edge, while the edge of the hook was round and blunt.

This hook Mr. Lund used as a lever to raise up the astragalus and lift it from the bed or socket formed by the scaphoid, upper surface of the calcaneo-scaphoid ligament, and the os calcis ; and passing it round one end of the calcaneo-astragaloid ligament between the bones by simple traction, he cut through the interosseous band in its whole length. This proved to be the key of the operation, for after its division he dislodged the astragalus, and, holding it firmly with Fergusson's lion forceps, made a few touches with the cutting hook, used first as a wedge between each side of the astragalus and the corresponding malleolus to separate the bones, and then as a cutter to divide the bands of the lateral ligaments. The bone was thus set free and drawn out easily. There were little if any impediments from fibres at the back of the astragalus, and none at all, as he had anticipated, from adhesions of the tendon of the flexor longus pollicis to the sheathed groove in the bone, for in fact the groove itself was very shallow and but poorly developed.

In other operations Mr. Lund used only the cutting hook and not the gouge or chisel, so that in these he did not injure the neighbouring bones or remove any portion of them.

In 1876 Davy published his operation of tarsectomy, which was closely followed by a variety of modifications. Davy's operation consists in securely fixing the foot in an ordinary portable vice, with its jaws defended by the common cork clamps (as used by gunsmiths). Having put on Esmarch's bandage, the leg and ankle should be accurately fixed in the vice, a T-shaped incision made over the enlarged bursa overlying the cuboid, dissecting back double door flaps, and inserting stout suture wires to act as a retractor. It is necessary to keep close to the bones, above and below, and to clear a V-shaped space on the dorsum and sole of the foot, taking for the apex of the

triangle the semi-lunar crease of skin which invariably exists on the inner side of the foot. Then the chisels and painter's knives should be used to accurately excise the wedge of the tarsus. This embraces the cuboid, the head of the astragalus, part of the scaphoid, the base of the little metatarsal, and a chip of the external cuneiform bone. The bone forceps should be used for extracting the wedge. The gap should be approximated, and the right and left laminæ of bone chiselled off until symmetry is restored. Rotation of the phalangeal portion of the foot is then performed until the foot becomes plantigrade; the wound is closed by tying the retracting tissues together. The foot is then fixed in a splint, and the leg put up in a gum and chalk bandage over waterproof splintage or flannel roller. The foot is swung so that the wound outside is dependent, and the foot-piece everted until the contour of the foot is natural.

The subsequent bleeding is not alarming, and the pain is by no means urgent. Swelling results, synovial discharge follows, and so the wound is healed and the patient convalescent and able to stand in from six weeks to two months.

Among the most recent operative advances in the treatment of club foot may be mentioned that practised by Fitzgerald, of Australia. An Esmarch bandage is applied from the toes to above the knee. The following tendons are then divided: The tendo-Achillis, close to its insertion; the tibialis anticus just above the ankle, and the tibialis posticus about one and a half inches above the inner malleolus, in the usual way. It now becomes comparatively easy to judge the amount of resistance offered by the contraction of the ligaments and fibrous structures of the sole. The fear that the divided ends of the tendo-Achillis will not unite, if severed as directed, is groundless. It is simply necessary to see that the gap, however large, which is occasioned when the parts are separated, is not obliterated by the too firm pressure of the bandage. To avoid this the ends and intervening space are protected by a piece of cardboard, over which the bandage is evenly and gently applied. The plantar fascia, the calcaneo-scaphoid ligament, the deep ligaments, the abductor pollicis, and all the resisting structures down to the astragalo-scaphoid articulation, are now freely divided. Fitzgerald has often found it necessary to sever some fibres anterior to the deltoid ligament. If the artery and nerve come in the way, their incision does not seem to affect the issue in the slightest.

Next comes the osteotomy. The instruments used are an ordinary tenotomy knife, rather long in the shaft between the blade and the handle, and a chisel. The chisel is made of the finest steel, its cutting

extremities bevelled like a V, similar to MacEwen's osteotome, the stem being of uniform size, perfectly smooth and round, and sufficiently long to be grasped, while at the same time it can be forcibly controlled by the forefinger resting on, and commanding the blade. (To one accustomed to handling instruments, the importance of the chisel being of manageable length can be easily understood.)

The astragalus is first divided through its neck. To effect this, a valvular incision, just sufficiently large to admit the chisel, is made with the tenotome obliquely down to the bone, the knife being entered on the outside of the foot and slightly inclined from above downward, a little backward and inward behind the calcaneo-cuboid articulation; so that it passes in its course through the foot immediately in front of the ankle joint. The tenotome being withdrawn, the chisel, firmly held, is pushed along the channel the knife has just made, so that it impinges on the bone at the spot where the astragalus may be said to narrow to a neck. The chisel enters this constriction, and with a little force, by pushing and twisting, it is manipulated in such a manner that the head or part of the bone which enters into the astragalo-scaphoid joint becomes detached from the body. The inner aspect of the foot is now attacked, and the scaphoid freely broken up subcutaneously. The os calcis is now subcutaneously divided obliquely, at a point just behind the posterior articulating surface, separating the bone into nearly equal halves. A few drills are put into the cuboid to help nutrition, and this finishes the actual operation.

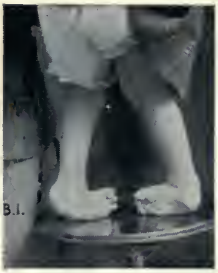
The next aim is to mould the foot into a normal position. Considerable force is required for this, and it is well to have the help of a trustworthy assistant, to prevent fracturing the tibia or fibula close to the joint or separating the epiphyses. The rotation of the tarsal bones may be assisted by enrolling the foot in a wet towel, or the member may be levered into position by means of a flat piece of wood firmly attached to the sole of the foot, and the os calcis forced into place. By these means, and the exercise of a little patience, it will be found that the foot can be nearly fashioned into good position. Any little fragment of the scaphoid that sticks out, or is unduly prominent, may be hammered back by a mallet, interposing a roll of bandage between the foot and the blow. All that now remains is to roll the foot in antiseptic wool, and apply firm but even pressure from the toes to the knee. The limb is put in a light trough splint with a foot-piece so adjusted that it keeps the foot in good position, *i.e.*, at right angles with the leg; the Esmarch tourniquet is then removed. In three or four days, when the superficial wounds are healed, a small splint is applied.

A

A.1.

A.2.

B


B.1.

B.2.

B.3.

C

C.1.

D

D.1.

D 2.

We hold that with the present surgical conveniences there should be no incurable cases of club-foot; and that its presence amongst us is due either to neglect on the part of the parent, or carelessness on the part of the medical attendant. We further maintain that every so-called relapsed case is merely an example of the harmful effects of pronouncing a patient to be cured before one is justified in doing so; and further that a case once cured is always cured.

As previously stated, the treatment in the case of a newly-born child should be commenced at once, and we have frequently started treatment during the first few days. Every week of delay adds considerably to subsequent toil. If for any reason it should be impossible to admit of early surgical aid, the nurse should be carefully instructed how to bandage the foot after the preliminary manipulations. These manipulations consist of efforts, at first gentle, and later less so, to twist the foot into the valgoid position. The bandage is then applied by starting on the inner side the dorsum round the foot, and thence passing above round over malleolus and back from the outer side round the external foot *(Fig. G, Plate XI)*. Every turn of a bandage so applied pulls the foot towards eversion, whereas if the bandage be started from the outer side the deformity is at each turn increased. These manipulations and bandagings should be repeated two or three times a day until more active surgical service can be procured. If the surgeon be fortunate enough to see the little one quite early, he should note the degree of rigidity of the foot. Should he be able with but little effort to restore the foot into its normal position, it will not be necessary to divide a tendon. Should the degree of resistance be more marked, division of the tendo-Achillis becomes imperative. A great deal has been written of the advantages of correcting the varus before dividing the tendo-Achillis. We quite fail to appreciate this, and on the contrary maintain that the Achillis tendon often helps to perpetuate the inversion. On referring to *Fig. E, Plate XII*, it will be noticed that the tendo-Achillis is displaced to the inner side to such an extent that aided by the tibiales it must assist in the inversion of the foot. This is also seen, but to a lesser degree, in *Fig. D, Plate XII*. We think it is never necessary in the early case to divide more than the tendo-Achillis, but the division should be complete, and an immediate attempt made at rectification. The division of the tendon is very often done in bungling fashion, and this is generally due to its altered position in the infant, to a want of information as to the best way of holding the foot, or perhaps to both. The child should be made to lie on its face while an assistant flexes the good limb well out of danger. An assistant should hold the foot, first in an extended position, while

the surgeon notes the position of the tendon and passes the knife to its inner side. The foot should then be slackened, while the operator turns the blade into the position for cutting. We prefer to cut from without in. The assistant is now directed to make the tendon tense, and with a short sawing movement the tendon is divided. With constant practice one easily dispenses with the aid of an assistant to hold the foot, for the surgeon operates on the right foot with the left hand, and on the left with the right, while with the free hand the foot is manipulated. In such a case we generally mark the inner site of the tendon with the thumb nail, a little point which will save much trouble. In the case of fat babies the tendon can only be felt, and but rarely seen.

Strict asepsis should be practised in these tenotomies, and the wounds sealed with collodion or covered with wood wool wadding. No permanent pressure should be made to check bleeding. If the bleeding is sufficient to demand pressure, and this is hardly ever the case, the bleeding vessel should be ligatured. Pressure diminishes the quantity of plastic effusion, and may be the cause of weak union between the divided ends of tendons. Dressed without pressure perfect union always results, no matter how far the cut ends are separated.

The foot should not be forcibly everted and flexed either by means of the hand, or with the aid of a wrench. Before applying the splint, we would recommend another procedure which will save an enormous amount of trouble later. We allude to the so-called inversion of the leg, which, after the rectification of the varus and equinus deformities, still remains, and is generally treated by girdle bands and other complicated machinery. This inversion may be noticed in *Fig. E, Plate XI.* The right leg, though cured of equino-varus, is yet rotated so that the patient walks with his toes turned in. This condition is also seen in *Fig. F, Plate XI.* There has been much discussion as to the cause of the rotation, which space will not permit us to follow, but we are convinced, after the examination of a large number of cases, that its cause lies entirely below the knee, and that it is generally accompanied by a displacement forwards and inwards of the fibula. We should therefore endeavour to anticipate this later development. By referring to *Figs. C* and *D, Plate XI*, the method we adopt will be readily followed. In the case of the right leg the surgeon grasps the ankle at the malleoli with the right hand, the thumb and palm being to the inner side. With his left hand he grasps the leg just below the knee and twists the leg in its long axis, just as one would wring a wet cloth. If this evolution is practised each time the foot is twisted, much will have been done to avert an awkward compli-

cation. The club-foot shoe is then to be applied, and the details of application should be studied. We use a club-foot shoe (*Fig.* 35) of extreme simplicity, which can be made by any country blacksmith at a very trivial cost (*Figs. H* and *J*, *Plate XI*). It is made of flexible sheet-iron, and is represented by *Fig. J*, *Plate XI*. After the foot has been manipulated into the best possible position, a piece of plaister should be started on the dorsum, passed under the sole, and given to an assistant to hold. He should be directed to pull at right angles to the leg (*Fig. H*, *Plate XI*), while the surgeon places the retention splint in position (*Fig. J*, *Plate XI*). This should be done for fully six weeks, either by the surgeon or someone he can trust; the splint being changed every day. We very much prefer the method of retention to that of plaster of Paris, which we have long since discarded. At the end of six weeks the most troublesome of this class (*i.e.*, cases which the surgeon sees during the first two years) will present a pliable foot which can be placed into normal position without encountering resistance, and if the child be sufficiently old he can be taught to walk in such a manner that each step he takes tends to improve the shape of the foot. If the child be too young to walk, it is necessary to wear the shoe until the time has come to walk. It need not, however, be changed excepting two or three times a week, and this can be efficiently done by the nurse or parent. No case of talipes equino-varus can be pronounced cured until the patient has tested it by walking. The shoe should have a low heel, and should be blocked on its outer side so that the superincumbent body weight is carried to the inner side of the tarsus (*Fig. H*, *Plate XII*). An iron support is placed on the inner side of the foot extending from the heel of the boot, which it enters, to an inch or two below the knee, and this splint still further aids the flattening of the arch. Until the patient can quite easily voluntarily flex his ankle he should continue the night splints. The second-class, the so-called "intractable" case, requires more patience, energy, and resource. We maintain that every case of club-foot can be cured without depriving the patient of any of his skeleton. Whether or not it is better to subject a patient to such operative procedures, must depend on a variety of circumstances which space will not allow us to discuss. Of this, however, we are convinced, that tarsectomies are often most unnecessarily performed, and that a percentage of them are fatal; that some are

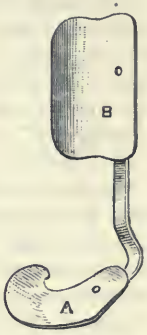


Fig. 35.

anything but successful; that recurrences due to unequal growth are by no means uncommon; and that surgeons should be prepared to realise how simply most cases of talipes can be cured. The pessimist note, struck by so many, of difficulties and impossibilities, is strongly suggestive that mechanical methods in the treatment of talipes, except simple cases, are but little understood. The treatment of neglected club-foot, where considerable bony changes have occurred, is the same as that of the so-called "recurrent" or "intractable" case. The "recurrent" case is generally due to one or more of three causes: (1,) Insufficient correction of deformity; (2,) The effect of superincumbent weight upon the outer side of the tarsus; (3,) A slack and lengthened condition of muscles opposed to the deformity. If the deformity be not sufficiently corrected in the first instance, the old condition of things is sure to return, because of the altered shape of bones and soft structure, more especially the ligaments. Roughly speaking, the change in bones and ligaments on the convex aspect of a talipes has resulted in an increased surface measurement (*Fig. C, Plate XIII*). Unless this is quite obliterated by treatment, the unequal growth goes on until the so-called "recurrence" again taxes our resources.

We have before said that no case should be looked upon as cured until walking has been practised. In other words, we mean that the foot, when the time for walking comes, will either be made worse or perfected by this exercise. If it be made worse it is due to the fact that the superincumbent body weight is placed too much to the outer side of the tarsus, and that therefore every step the patient takes tends to emphasise the varus. One can see on reference to *Fig. D, Plate XIII*, how deleteriously walking would affect such a case. It should give the finishing touches to the surgeon's art, and should not be allowed until the body weight at every step tends to flatten the plantar arch.

The effect of lengthened muscles opposed to deformity is very obvious, and when one realises the fact that in every case of club-foot the peronei and flexors of the ankle have for months remained in a stretched condition while the tibials and calf muscles are short and unstretched, it is easy to understand imperfect recovery where no attention is paid to the strengthening of the weak group of muscles. In these more difficult cases of club-foot, we start with a tenotomy, and generally confine ourselves to the tendo-Achillis; sometimes we also divide the tibials and all tendonous structures which are obviously short. Having done this we immediately wrench the foot with a Thomas's wrench, the construction of which we now describe. It is

made from a monkey-wrench by sawing off the jaws, boring a hole from the side through the fixed head-piece, into which is set a strong pin, and a like hole into the travelling head-piece, into which a second pin is set. A slot must also be cut in the main stem of the wrench for the second pin to play through, as the travelling head-piece moves up and down. A thin slotted shield is placed at the base of the pins, so that the skin may not be pinched between the head-pieces when they approach each other. The pins should be straight and slightly bulbous at the end, to prevent their covers from slipping off. They may be covered with leather or rubber. It is applied to the foot as shown in *Fig. A, Plate XII*, and the foot twisted into normal position as in *Figs. B* and *C*. The twisting and bending are done quickly and forcibly, and the foot immediately released. Holding it too long in the bite of the wrench may result in a pressure sore. The keynote of treatment depends upon the extent to which the stretching or wrenching is carried. It should be carried to such a degree that the resiliency of the soft parts is lost; to such a degree that the part is temporarily paralysed, and lies limp in the hand. Many surgeons who use the wrench fail, because they do not use sufficient force. Of many hundred cases wrenched by us we can only recall two or three in which skin splitting resulted, and in one the rent was over the site of a Phelps' operation, and the remaining steps of open incision were performed. The foot should be well bitten by the pins before it is twisted; and the wrench is liable to slip, become ineffective, and scrape severely, if this is not done. After the wrenching, the foot is placed in the best possible position as before explained, and the retention splint applied *(Figs H* and *J, Plate XI)*. After two or more days, depending upon the severity of the deformity and the wrenching, the resiliency of the soft parts begins to return; the foot is then again subjected to the wrenching procedure. In this way the treatment is kept up until the deformity is fully corrected and shows no tendency to recur. Following this the foot is retained in the corrected position until all the parts have adapted themselves to their new relations, or as Thomas used to put it, "until the slack has been taken up" on the side of the convexity. This taking up of the "slack" is an essential feature in treatment, and is not sufficiently appreciated by the profession. Surgeons have always known that corrected club-feet were liable to relapse unless retained in the corrected position for a certain time, but the reason for relapse is a lack of muscular balance. In the non-congenital cases of equino-varus, the fault, a paralysis, lies in the abductors and flexors of the foot; in the congenital, the fault to which the relapse is due

lies in the same muscles. They are weak from disuse and at a disadvantage from over-lengthening. When a foot has continuously been held in a corrected or over-corrected position for a sufficiently prolonged period, structural shortening takes place in these elongated muscles, and in the ligamentous and other soft parts on the convexity of the deformity. When the foot has been so long retained in the desired position that it cannot by manipulation be carried into the position of varus more readily than valgus, and when the patient is able to abduct and flex his foot by voluntary effort, then, and not until then, can treatment be discontinued, the patient discharged cured, and the certainty of no relapse be assured. The wrenching may be required six or eight times, and in extremely obstinate cases (*Figs. B, D, Plate XIII; Fig. A, Plate XIV*) more often still. An anæsthetic is best administered for the first occasion or two, and may safely be omitted subsequently. The pain is but moderately severe, and lasts but a short time. In a very few minutes all crying ceases.

As before stated, we can prevent the talipedic inversion in early club-foot by daily twisting the tibia and fibula in their long axes. In the more advanced cases this, of course, is impossible, and where it is extreme we bring the osteoclast into play. The leg is fractured just above the ankle, and the foot is rotated several degrees outwards. By this means expensive and tedious machinery is avoided, and the orthopædic mechanician, with his endless screws and rachets, is happily dispensed with. We note that Grattan, of Cork, also advocates osteoclasis in this connection. As soon as the deformity is corrected and the weakened tendons strengthened by the use of massage and posture, the patient may be allowed to walk. His boot should be altered, as in *Figs. G* and *H*, *Plate XII*, and an outside iron affixed to ensure a straining of the ankle into the valgoid position.

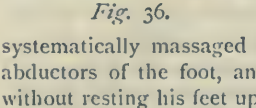


Fig. 36.

Even more effective than this alteration is the use of what we term a "flapper." This consists of a rim of iron half an inch wide and a quarter of an inch deep, which is made sufficiently long to lie along the outer border of the sole (*Fig.* 36).

For some time the muscles should be systematically massaged and appropriate exercises prescribed for the abductors of the foot, and the patient should never be allowed to sit without resting his feet upon the floor.

Plates XII and *XIII* show several typical cases treated according to this method, with all but perfect result. In no case was active

A

A.I.

B

B.I.

B.2.

C

C.I.

D

D.I.

D.2.

treatment carried on for longer than a few months ; in some only for a few weeks. We have performed many tarsectomies and astragaloid excisions, but have a decided preference for the results which can be obtained by the use of the wrench. The joints are more pliable, the foot longer, the walk less stumpy, and the surgeon never passes through a moment of anxiety. *Fig. A, Plate XIV*, represents the foot of a boy aged twelve years, where Lund's operation was performed on the right foot, and the left was merely wrenched. Treatment of both feet was commenced on the same date. Dr. Betts, who was a keen advocate then for the operative methods, took charge of one foot and one of the authors took charge of the other. The result was distinctly in favour of the instrumental measures. *Figs. B, B1, B2, Plate XIII* are also of interest. The little patient, aged six, has been tarsectomied in each foot, and two years later presented the appearance depicted in *B1, Plate XIII.* After eight weeks' wrenching, the feet are photographed as *B2*. This is a severe test to put the wrench to, as a foot once subjected to bone operations which have failed, is extremely unpliable to very severe force.

OZÆNA.

Synopsis.—(Vol. 1895, pp. 28, 46 and 53.) Inhalation of **Ethyl Iodide.** Insufflation of **Soluble Saluminum.** Application of crystals or concentrated **Trichloracetic Acid.**

PACHYDERMIA LARYNGIS.

Synopsis.—(Vol. 1895, p. 393.) Abstention from alcohol and tobacco; **Rest**; **Potass. Iodide** in small doses is strongly advised by some authors; when confined to interarytenoid fold and vocal cords the best local application is **Lactic Acid** or **Iodine** in dilute solutions; large nodules are removed by cutting forceps. Chiari employs an **Electrical Current** of 10 to 12 milliamperes for three to five minutes per sitting. Scheinmann uses **Common Salt Sprays** or dilute **Acetic Acid** by spray or injection, also prolonged **Inhalation of Steam.** Michelson employs **Leiter's Cold Coil.**

PANCREAS (Surgery of). *A. W. Mayo Robson, F.R.C.S.*

Acute Inflammation of the Pancreas.—Dr. W. Körte,[1] in an article on the surgery of the pancreas, describes four cases of acute inflammation of the pancreas operated upon by him, two of which recovered.

The early symptoms are those of acute intestinal obstruction, which may end in collapse and death, or which may become subacute or chronic, when gastric disturbances, septic fever, diarrhœa, evacuation of pus per anum, and sometimes slight jaundice, are the chief points to be noted. In all cases vomiting and epigastric pain were present.

Two cases are recorded of exfoliation of the necrotic pancreas and its passage per anum, followed by recovery.

The abscess may rupture into the peritoneal cavity, or burrow in various directions in the sub-peritoneal tissue.

Dr. Guthrie,[2] after describing two cases of malignant disease of the pancreas, discusses the symptoms presented by them: "The leading positive symptoms in both cases were great emaciation, excessive weakness, paroxysmal pain; and in the later stages of the illness deep-seated epigastric tenderness, while in the second case there was further evidence of a lump in the epigastrium; on the negative side there was an absence of fatty stools, glycosuria, prominent digestive disturbances, persistent jaundice, or malignancy in the family history."

So much stress has been laid on the presence of fat in the alvine evacuations as characteristic of pancreatic disease, that these two cases are instructive as tending to prove that, even in advanced condition of structural disease of the organ, that symptom may be entirely wanting.

The absence of colour from the motions has also been insisted upon by some writers as indicative, in the absence of readily recognized hepatic disease, of some interference with the pancreatic secretion. Claude Bernard taught that the colouration of the fæces was indirectly due to the action of the pancreatic juice, and Dr. Walker, of Peterborough, likewise came to the conclusion that a deficiency of pancreatic fluid would, as readily as a deficiency of bile, cause clay-coloured evacuations.

If this were entirely true, it is difficult to understand why in both these cases—and particularly in the second case, where the whole substance of the gland had undergone extensive change—the motions were not always colourless.

The author also remarks on the absence of glycosuria and of notable digestive disturbance.

The severe colicky attacks in both cases, and the irritating cough, drenching perspirations, and weakened cardiac action in one case, are thought to be the reflex effect of irritation of the large abdominal plexuses.

REFERENCES.—[1] "Verhandlungen der Deutsch. Gesellschaft für Chirurgie," xxiii Kongress, 1894; [2] "British Medical Journal," May 11, 1895.

PANCREATIC OBSTRUCTION. *William Auld, M.B.*
Vaughan Harley, M.D., M.R.C.P.

The following typical case of this morbid condition has been alluded to by Dr. Vaughan Harley in a valuable paper contributed to the "Journal of Pathology and Bacteriology," August, 1895, the perusal of which we would recommend to our readers.

E. W., aged twelve, during convalescence from scarlet fever developed an attack of what appeared to be gastritis. On his recovery, he left home for a change, during which time he suffered from some slight albuminuria, and an oily secretion was observed on his clothes. He returned home immediately, and the urine being examined was found to be quite normal as regards the presence of albumen or sugar. The motions were large and soft, light brown to grey in colour, and were passed after each meal. Mixed up with and surrounding them was a brown oily-looking material with a most offensive smell, and which on cooling solidified and looked exactly like beeswax. The motions also contained undigested meat, in which the fibres could be distinctly made out. The appetite was excessive. The abdomen was distended with flatus, and pain was complained of in the rectum, which, on examination, was found much congested, the mucous membrane presenting a good deal of villous growth. The case was diagnosed as obstruction of the pancreatic ducts from duodenitis, this being most probably the correct explanation of the symptoms previously diagnosed as gastritis. The treatment prescribed was a diet of **Milk, Mellin's Food, Fish** and **Bread,** together with **Malt** and **Cod-liver Oil,** with **Pancreatine** (2-grain pills salol-coated) after each meal ; 2 grains of **Calomel** at night, and **Sulphate of Soda** in the morning were also ordered. Under this treatment no oil appeared for three weeks ; then it began again, and his condition got worse until June, 1894, when he went with me to London, and saw Dr. George Harley, who confirmed the diagnosis of pancreatic obstruction, and advised the use of **Liquor Potassæ** and **Benzoate of Potash,** in addition to the above treatment, the latter having a most decided effect in subduing the objectionable odour of the motions, although, in other respects, they remained the same as before.

The benzoate of potash was continued ; also the calomel powders at night, together with **Liq. Ferri Perchloridi Dil.** ♏viij, thrice daily, with the result that the irritability of the rectum improved, the motions became more formed, and the quantity of oil lessened considerably. His weight now (July, 1894) was 76 pounds. From this date to February, 1895, he continued to take the malt with cod-liver oil, pancreatine pills, 2½ grains, thrice daily, the iron tonic, and also the potash benzoate and calomel. He was now passing two large motions daily, and the quantity of oily matter varied, as much as two ounces being voided at times, and at others, none. During August and September, 1894, its appearance was marked by a peculiar regularity as follows : For eight days none appeared, on the ninth a large quantity (℥ij), on the tenth a few drops only, then again for eight days

it was absent. During October and November the regularity was not so marked, and the maximum quantity was five drachms. Any over-exertion, exposure to cold, or sudden fall of atmospheric temperature was invariably followed by an increase of the fatty matter the next day. In the following December, Dr. Vaughan Harley made an analysis of the motions, and recommended the administration of **Raw Pancreas**, which was begun February 28, and carried out for ten days, the patient receiving (? quantity) pig's pancreas daily, but this was discontinued on account of his temperature suddenly rising to 104° F., with rapid pulse, headache, malaise, and white-coated tongue, and the following day the temperature was 105°F.; during the next two days it fell to sub-normal, reaching 97°F. on March 13, when he suffered from attacks of syncope every two hours, which gradually subsided, the temperature remaining sub-normal until March 22.

These symptoms were probably due to influenza (which was prevalent at the time) in a previously debilitated subject, but the boy having remarked two days before the attack that one of the pancreases tasted differently to the others, his parents ascribed the illness to the treatment, and declined to pursue it further, thus rendering it necessary to revert to the drug treatment above mentioned, and which he still continues. His present condition (November 3) shows great improvement in general health, the two daily motions are still rather large, but no oily matter has passed since 25th of last September, and he has gained 16 pounds, his present weight being 92 pounds.

Remarks by Vaughan Harley, M.D., M.R.C.P.

The results of the analyses showed that large quantities of fat appeared in the stools, no less than 73·05 per cent. of the total quantity given. And, still further, the proteids excreted in the fæces were far above the amounts normally found, so that 40 per cent. of the nitrogen given had been excreted in the stools.

The foul odour of the stools was a constant feature in the case of dogs, in which almost the whole pancreas was removed, and was, at the same time, specially marked in the case of this boy, so that it is worthy of note. These facts led me to believe that for some reason or other the pancreatic secretion was not reaching the alimentary canal. That this is not due to an absence of the pancreas, or destruction by disease, is shown by the fact that sugar at no time has been present in the urine, and, therefore, the evidence is in favour of an occlusion of the duct of the pancreas.

The morbid anatomical condition which has led to this obstruction would appear to be some chronic inflammatory stricture of the duct.

At the same time, since analysis has shown us that bile is reaching the intestine, the common bile duct must have remained free. We cannot suppose that the common orifice of the bile and pancreatic duct can even be partially obstructed, for since bile and pancreatic juice are secreted at about the same pressure, namely, 200 mm. of water, it is hardly possible that only one should be hindered reaching the intestines. The pancreas is, however, known to have, very frequently, accessory ducts, or in some rare cases to enter the duodenum separately from the common bile duct.

The commonest form of accessory duct is one entering the duodenum nearer the stomach (*Fig.* 37, *d*), and we know from the history of the case that the boy suffered from gastritis previous to the appearance of the foul-smelling motions. It is conceivable that either the main duct of the pancreas *a* may be absent, and only the accessory duct is present, so that the inflammation spreading from the stomach down the duodenum may have involved it, without having extended far enough to have likewise involved the orifice of the common bile duct *c*. In this way there might have been a complete obstruction to the pancreatic duct; or we can imagine that both the main duct *a* and the accessory duct *d* were present, but the inflammation had extended up the accessory duct so as to involve also the main duct.

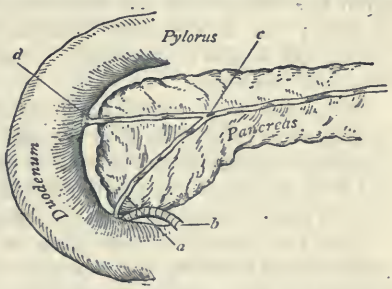


Fig. 37—*a*. Main pancreatic duct; *b*, Common bile duct; *c*, Point of junction of main and accessory pancreatic duct; *d*, Accessory pancreatic duct.

This being the diagnosis, and it being impossible to give a drug which could with any certainty cure the morbid condition, it was necessary to consider what could be done in the case.

Abelmann found that feeding dogs after removal of the pancreas with raw pancreas caused an increased absorption of fat. I therefore recommended Dr. Auld to give the boy raw pancreas. From 28th February until 10th March, 1895, this was done; and during this time the quantity of oil passed with the stools was very markedly decreased, although it did not entirely disappear. The foul smell was absent, but, since the boy was at the same time taking calomel and potassium benzoate, both powerful intestinal antiseptics, we can hardly put this fact down to the raw pancreas. The parents, later, refused to continue the pancreas treatment, in consequence of his having been ill after

eating a supposed bad one. During the last four months, with careful dieting and treating symptoms, he has increased in weight.

In conclusion, it may be said, from the results of the analyses in this boy's case, and of the dogs' cases from which the pancreas was either partially or completely removed, that the pathology of the absence of pancreatic juice from the intestines is more complicated than one is at first led to believe, seeing that not alone is there a diminished absorption of fat, so that only 26·95 per cent. of the total given was absorbed in the case of the boy, and from 4 to 37 per cent. in dogs; but at the same time, the proteid absorption is greatly diminished, so that in dogs only 18 per cent., and in the boy 60 per cent., was absorbed.

The results of the analysis of the fæces in the boy has shown that the non-absorption of fat after removal of the pancreas is not due, as is generally supposed, to any want of the splitting up of the neutral fat into fat acids, glycerine, and the formation of soaps, but, on the contrary, is due to some cause as yet unexplainable.

When the quantity of food given is increased above the quantity necessary for a healthy individual, so that the quantity absorbed may be equal to the number of calories necessary to maintain the body weight in health, owing to improper metabolism, they are insufficient to keep the weight up to the normal standard when the pancreatic duct is obstructed. On still further increasing the quantity of food, however, the body weight can be maintained, and we see that in the case of this boy careful dieting, together with treatment, has not only been able to keep up his weight, but even to cause a gain of 2 pounds in a space of four months.

PARALYSIS. (See also "Bulbar Paralysis.")

Græme M. Hammond, M.D., New York.

General.—Boedeker and Falkenberg,[1] in searching for the ulnar symptom in general paralysis, examined one hundred male and twenty-five female paralytics, and three hundred non-paralytic insane persons. In 58 per cent. of the paralytics the ulnar nerve was analgesic; in 35 per cent. pressure caused pain; in 7 per cent. the result was doubtful. Of the non-paralytics, 39 per cent. showed ulnar analgesia, the remainder did not. They found the ulnar symptom in 74 per cent. of thirty-one paralytics who exhibited loss of knee jerk; they however attach little importance to the ulnar nerve symptom in the diagnosis of general paralysis.

Cramer[2] says that in 75 per cent. of general paralytics the ulnar is not painful on pressure, but that in most cases of other forms of

insanity pressure between the olecranon and the inner condyle produces sharp pain.

Facial.—Goldzietier[3] relates a hitherto unknown symptom of this disease. He affirms that in complete facial paralysis in which there is also paralysis of the velum palati, there is no lacrymation and the eye is dry on the paralyzed side.

Infantile.—Dr. C. S. Caverly[4] reports on an epidemic nervous disease in which the characteristic symptom was paralysis, and most commonly in young children, occurring in thirteen towns in central Vermont. The subject is of value, especially when as President of the State Board of Health he was in a position to obtain a great deal of valuable information concerning one hundred and twenty-six cases on which he prepared a most interesting paper.

It was shown that the epidemic was confined mostly to the working classes and to those whose sanitary surroundings were not of the best. It seems that it was confined more particularly to the Otter Creek Valley, and that this stream was sluggish, very low, and dammed at several points. The epidemic occurred in the middle of the hot season. These facts, taken together, raise a question of considerable importance in reference to the etiological factor of infection, especially when it is stated that many domestic animals succumbed to the same disease.

It can also safely be asserted that the disease was non-contagious, as but one member in a family was affected.

The analysis of the cases reported in full led to the opinion that the disease was in the main a characteristic acute poliomyelitis. There were eighteen deaths; of these seven died in the initial stage of the disease. The remainder, however, all showed the marked symptoms of paralysis in some group of muscles. Sixty-six cases out of the entire number had paralysis of both legs. There were only six cases who recovered in which marked paralysis was not noticed. They showed marked rigidity, strabismus, or some other motor defect. The author makes his report too soon after the epidemic to say just how permanently the cases which are still under observation are paralysed. The epidemic was unlike the typical cerebro-spinal meningitis variety, in that it was but slightly cerebral in character and that there were but few deaths. It will be interesting to note the future of the fifty-three cases which still remain paralytic.

Medin[5] observed a similar epidemic in Stockholm in 1887, and also showed in the analysis of over forty-four cases, though they were poliomyelitic in type, that the paralysis was more extensive in its range of muscular envolvement than in the ordinary disease. There was

ophthalmoplegia, facial and laryngeal paralyses, and even the vagus was often involved. Medin, in his report, considered infantile paralysis a specific infectious disease, in the acute stage of which the entire organism may be affected. Rissler, in his autopsies, takes the same ground. Roger, Thornat, Masselin, Bourges, and Vincent produced poliomyelitis in rabbits and guinea pigs by inoculations with the coli bacilli, and the streptococcus of erysipelas modified by culture.

In this connection E. Redlich[6] has recently reported a case of infantile paralysis, in which the autopsy conclusively proved to him that, although the entire cord was more or less implicated, the most extensive destruction was found to have taken place in the anterior horns of grey matter, the ganglion cells showed acute degeneration, more marked in the lumbar enlargement, and that the vessels, especially the anterior fissural artery, and the branches to the anterior horns were acutely inflamed. The whole appearance of the morbid process suggested the presence in the blood of some toxic agent affecting primarily the vessels, and secondarily the anterior grey matter of the cord and certain irregular foci in other parts of the cord, bulb, and certain nerves.

REFERENCES.—[1] "Neurol. Centralbl.," Feb. 15, 1895; [2] Epitome, Sept., 1894; [3] "Rev. gen. d'Ophtal.," Jan. 31, 1894; [4] "Med. Record," Dec. 1, 1894; [5] "Neurol. Centralbl.," 1891; [6] "Wien. klin. Woch.," 1895.

PEDICULOSIS. *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

Olei Staphisagria ʒj, **Ungt. Hydrarg. Ammon.** ʒiij, **Adipis** ad ʒj.[1] [We know of no treatment so speedy and certain as the simple one of applying **Paraffin Oil**.—ED.]

Jamieson[2] recommends that a piece of **Sulphur**, the size of a pigeon's egg, be worn next the skin night and day. The sulphurous vapours imperceptibly penetrate the clothes and render them unsuitable for the existence of the parasite. In this way the disease may be treated without the patient being aware of the nature of his ailment.

REFERENCE.—[1] "Practitioner," Jan., 1894; [2] "Brit. Journ. of Dermatology," August, 1895.

PEENASH (Nose Maggots, or so-called Vermes Nasi).
N. C. Mitra, M.A., M.B., Ranchi, Bengal.

This is an Indian disease. The patient comes in suffering from excruciating pain in the nose, and, on syringing, fully formed maggots come out. The patients are not lepers, nor are they syphilitics in all cases. The only previous history that can be arrived

at is that the patient had epistaxis some days previously. Most probably flies flock and deposit larvæ, which form into maggots. But it has not yet been made out how and when these flies have access into the cavity. The maggots, if left, make way into the mouth by perforating the soft palate, and after a time the bridge of the nose is found depressed to a hideous extent. For getting rid of the maggots various methods have been suggested, but none are so efficacious as **Chloroform Drops,** which drive out the maggots in numbers. Dr. Mayne reports a case of death from the havoc of these maggots. Most probably syphilis is the primary cause of the disease.

REFERENCES.—" Brown's Annual Report," Mayo Hospital, Lahore, 1872; Doss, " Indian Med. Gaz.," April, 1874; Mayne, Ibid., Jan., 1875; Deakin, Ibid., March, 1880.

PEMPHIGUS. *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

Dubbs, Chicago, reports a case, which improved under the internal administration of **Quinine** and **Arsenious Acid,** and externally, **Baths** with **Perchloride of Mercury,** followed by **Ointment,** and an **Alum Dusting Powder,** 20 per cent.

Bulkley[1] reports two cases of bullous eruptions in children, completely cured by **Arsenic.**

Cornet[2] recommends **Iron** and **Arsenic,** and in some cases **Cod-liver Oil.**

REFERENCES.—[1] "Archiv. Pediatrics," Jan., 1893; [2] "American Journ. of Med. Sci.," April, 1894.

PERITONITIS. (See also " Abdominal Surgery.")
A. W. Mayo Robson, F.R.C.S.

A case which I[1] reported at the Clinical Society (June 11, 1895) clearly demonstrates the importance of operating in doubtful cases of peritonitis, although the cause may be undiagnosed, as indeed it is frequently undiagnosable.

It was one of complete volvulus with strangulation of omentum; the strangled mass which was the cause of the peritonitis was removed, and recovery followed.

So far as I know the case is unique, and I think that in all probability a correct diagnosis was impossible. The whole staff agreed with me in thinking there was strangulation of omentum in a hernial sac which had been reduced *en masse*, the free passage of flatus clearly indicating that the bowel was free from strangulation.

Mr. Marmaduke Shield[2] describes one of the few published cases of ruptured hydatid cyst, where abdominal section has been success-

fully performed. He remarks that the diagnosis in such cases is always doubtful, and emphasises the importance of performing abdominal section in all dubious cases associated with grave abdominal symptoms.

Frequency of Peritonitis.—An extremely interesting paper is found in the "Chicago Clinical Review," by Dr. Byron Robinson, in which he shows that out of a series of fifty autopsies, there were traces of pelvic peritonitis in 75 per cent. of females and in 14 per cent. of males. In the former the inflammation had originated in the Fallopian tubes, and in the latter in the vesiculæ seminales; in the greater number the cause had been gonorrhœa.

Out of the fifty subjects, 72 per cent. showed traces of peritonitis in the region of the appendix vermiformis, and 66 per cent. in the gall bladder region. The interesting point in the series is that only 4 per cent. were free from traces of peritonitis, which, as is now well recognized, is, when local, a life-saving process, and nature's method of protection against infection. It is not the inflammation, but the infection which constitutes the danger.

Dr. Andrew J. McCosh[3] describes a case of general suppurative peritonitis due to rupture of a periprostatic abscess secondary to gonorrhœal urethritis.

Laparotomy, lavage, and drainage were followed by death fifty hours after operation.

Reference is made to nine other fatal cases secondary to urethritis.

Gonococci could not be demonstrated either in the urethral secretion or the purulent exudate in the abdomen.

At a meeting of the Philadelphia Academy of Surgery, Dr. Oscar Allis,[4] in a somewhat theoretical paper, recommends continued lavage of the peritoneal cavity after laparotomy for general suppurative peritonitis.

Mr. Wherry[5] (Cambridge), in an interesting paper, advocates laparotomy in tuberculous peritonitis. He says that operation arrests the activity in the abdominal disease. "It will be, perhaps, found that a case with a large quantity of fluid is most suitable for laparotomy; this may only be because the fluid collects more in the earlier stage of the disease, and adhesions mat together the bowels in more advanced cases. Tapping the abdomen alone makes no favourable impression as a rule."

Tuberculous Peritonitis.—M. Follet[6] related the case of a woman suffering from tuberculous peritonitis, and in whose abdominal cavity he injected three litres of air after having removed six litres of serum. The liquid did not return, the general condition of the patient

remained good, and this satisfactory result has been maintained for the last eight months. The speaker alluded to a somewhat similar operation, reported by Von Moorhof, on a child of five years, for a tuberculous lesion of the scrotum ; after withdrawing a large amount of fluid, M. Moorhof insufflated air into the sac, and up to the present—that is to say, five months—no liquid has returned. M. Follet suggested, consequently, that this benign operation might be resorted to where laparotomy was not feasible.

Following the treatment proposed by Rendu, M. Guignabert[7] details the method of intraperitoneal injections as employed by himself.

This treatment being especially indicated in those forms called "ascitic," an ordinary trocar (of Reybard), a syringe (of Pravaz's model), a solution of pure camphorated naphthol, and an antiseptic solution for cleaning the abdominal wall, are all the instruments and solutions required.

The point selected lies midway between the umbilicus and anterior superior spine of the ileum. The point, being carefully cleansed, is punctured by the trocar, previously flamed.

All or almost all the ascitic fluid being removed, the cannula is left in place, and five syringefuls (something over a drachm) of the naphthol are injected.

The cannula being withdrawn, the perforation is closed by aseptic wadding and collodion. The fluid is distributed by the peristalsis of the intestines, and occasions only a small amount of pain.

The abdomen, however, remains tender for a few days and the temperature rises ; in a case cited the temperature rose on the third and fourth days to 39° C. Also to be noted in the first few days is the presence of a small amount of fluid, which soon disappears. When the abdomen again becomes soft and the peritoneal reaction disappears, one can feel the thickened membranes and epiploic appendages ; these gradually disappear at the end of a few months.

Treatment of Ascites.—Finsen,[8] who for ten years had suffered from ascites (due to congenital heart affection and hydatid of liver), and had tried all usual remedies in vain, attempted to "dry up" his ascites by bringing as little fluid as possible to the system. For nine days he took only 400 g. of fluid in the twenty-four hours, with the result that three or four days after commencing the dieting his diuresis increased in quantity from 800 c.cm. on the first day to 1,100 to 1,200 c.cm. on the third to the fifth day—an amount which he had not passed for years. At the same time the other distressing symptoms disappeared. He

has since been able to keep his ascites in check by being careful not to imbibe too large quantities of fluid, and when he finds it increasing again adopting a dry regimen. By way of experiment he once brought on an ascites in ten days, and got rid of it in another ten days. When the ascites was great and the diuresis small the treatment was slower in taking effect. When the diuresis was 800 c.cm. it was easy to get rid of the ascites by a not very severe diet; but of late years, when it has often been only 400 to 500 c.cm., the author has had to be much stricter in his dieting. He found by experiment that when the diuresis was 500 c.cm. he had to drink 300 c.cm. less daily to get the same result as when it was 800 c.cm. To expedite matters he has of late years combined the dry dieting with 7 to 8 g. doses of light magnesia daily or every other day, and was able to free the system from 700 to 800 c.cm. fluid by purging only. In spite of this treatment, the author was able to carry on his work. He also tried 5 g. doses of chloride of ammonium and dry dieting, but, though less exhausting, this method was not so rapid as dry diet and magnesia. As regards the increase in the diuresis, which was almost in inverse proportion to the fluid imbibed, the author is inclined to think that, whenever there is a retention of fluid in the body in open connection with the lymphatics, absorption from it will not commence until the blood has reached a concentration requiring dilution. As a rule the increase of urine began first a few days after the commencement of the dieting, and these first days were the most distressing, with great thirst, dry tongue, and salt taste of the saliva. As soon as the diuresis began—generally on the third or fourth day—these symptoms disappeared. It must be assumed that the blood during the dry diet becomes concentrated, and when it has reached a certain degree of concentration the absorption begins from the lymphatics, and it would seem as if the absorption, having once begun, becomes more and more easy. And by the commencing absorption of the ascites the diminished intraperitoneal pressure on the liver and kidneys allows a freer passage of blood through them. It is well known that after tapping an ascites or anasarca a diuretic which previously had no effect now produces diuresis, which might be explained in a similar way.

REFERENCES.—[1] "Trans. of Clinical Soc.," 1895; [2] "Lancet," Sept. 28, 1895; [3] "Annals of Surgery," Feb., 1895; [4] Ibid.; [5] "Lancet," Oct. 5, 1895; [6] "Therap. Gaz.," Feb 15, 1895; [7] "Revue Obstetricale et Gynécologique," July, 1894, and "Therap. Gaz.," Nov. 15, 1894; [8] "Ugeskrift for Laeger," Nos. 38, 39, 1894, and "Brit. Med. Journ.," Feb. 16, 1895.

PERITONITIS (Tubercular).

Synopsis.—(Vol. 1895, p. 415.) **Drainage by Gauze**, preferably to avoid fistula. **Insufflation of Sterilized Air** (air passed through caustic potash moistened with phenic acid). Tuberculous ascites has been treated by injecting through a cannula hypodermic syringefuls of **Camphorated Naphthol** after withdrawing a part only of the fluid. The puncture is closed with an antiseptic dressing.

PERTUSSIS. (See also "Whooping Cough.")

Henry Dwight Chapin, M.D., New York.

Drs. Wells and Carré[1] advise the administration of **Cocaine** in pertussis. Their practice is to give doses of hydrochlorate of cocaine in water based on the standard of a 1-grain dose for an adult, three or four times a day by the mouth. They have never seen any marked evil effects follow the use of cocaine; the only unfavourable symptom was in some cases slight relaxation of the bowels, and this may be rather beneficial on account of the constipation so often found in whooping-cough. The average duration of the disease under cocaine treatment is about three weeks; in slight cases it may be a fortnight or less—indeed it seems as if pertussis may be made to abort in many of the slighter cases if the patient is seen and treated early.

Dr. Frühwald[2] reports a prompt reduction in the intensity and number of the paroxysms in pertussis, by the use of **Antispasmin.** This drug is a combination of one molecule of narceinnatrium with three of salicylate of sodium. The drug was usually ordered in a 5 or 10 per cent. solution, with dilute water of bitter almond, three or four times daily in a tablespoonful of sugar-water, or in milk or cocoa, in soup, or for older children on a half-coffeespoonful of pounded sugar. Of the 5 per cent. solution the dose for an infant under six months was 3 to 5 drops (=0·01 pro dosi); for a child of one year, 8 to 10 drops; two years, 10 to 12 drops; three years, 15 to 20 drops. For children over three years of age the 10 per cent. solution was used, beginning with a dose of 10 drops, three times daily, increasing, if necessary, to 15-drop doses, three or four times daily. The solution should be protected from the light by using a blue-glass bottle. The price of the drug at present is said to be high.

Dr. de Chateaubourg[3] describes a new treatment of pertussis, which consists in injecting, subcutaneously, 2½ cubic centimètres of a 10 per cent. solution of **Guaiacol** and **Eucalyptol** in sterilized oil. After the third injection the fits of coughing diminish noticeably, the appetite returns, and, as the vomiting rapidly ceases and the general condition begins to feel the good effects of the treatment, the whooping cough disappears at the same time. Five cases are reported.

Dr. Fischer[4] advises **Quinine**. The doses he employed varied from 1 to 6 grains in powder three times daily. He finds it diminishes the number of paroxysms in five days at latest.

Dr. Rehn[5] recommends a new preparation of antipyrin in pertussis. If antipyrin is added to mandelic acid a crystalline body (**Antipyrin Mandelate**) separates out. The remedy was tried in from fifty to sixty cases in children of various ages, with good results.

The improved appetite and disappearance of the vomiting are very probably due to the sedative action on the stomach. The duration of the disease was, on an average, three weeks in medium and three to five weeks in severe cases. For infants under a year, 0·05 to 0·10 g., and for children between three and five years, 0·25 to 0·50 g. can be given. No unpleasant symptoms were noted.

REFERENCES.—[1] "Lancet," June 8, 1895; [2] "Archiv. f. Kinderh.," Bd. xviii., Hft. 1, S. 38; [3] "Med. Moderne," Dec. 26, 1884; [4] "New York Med. Journ.," May 11, 1895; [5] "Münch. Med. Woch.," Nov. 13, 1894.

PHARYNX (Diseases of). *P. Watson Williams, M.D., Bristol.*

Adenoid Vegetations (*Post-Nasal Adenoids, Hypertrophy of the Pharyngeal Tonsil*).—Twenty-eight years ago Wilhelm Meyer recognized that hypertrophy of the pharyngeal tonsil was the chief cause of deafness in children, as well as the main factor in the production of a now well-recognized train of symptoms due to nasal obstruction; and now almost before the value and importance of his discovery has been fully appreciated by practitioners throughout the civilized world, we have to deplore his death. Thousands of persons now living owe their deliverance from life-long deafness to his labours, and I shall perhaps be excused in venturing to draw attention to the international memorial now being raised to his memory.

The affection is described in every text-book, including the region of the naso-pharynx, and has already been discussed in the pages of the "Medical Annual," in previous issues. I, therefore, propose to deal with only a few of the more important and less appreciated points requiring consideration.

In the first place, I would earnestly protest against the tendency to operate unnecessarily, as patients are constantly brought under my notice in whom a removal of adenoids has been recommended, in my opinion, without any justification. I have dwelt at some length on the relation between adenoids and enlarged tonsils, and infection by tuberculosis and other microbial affections, but it is important to remember that we are not warranted by the present state of knowledge in assuming that such infection can occur in connection

with normal tonsils. Dr. J. H. Nichol has recently published his impressions derived from a study of five hundred enlarged glands of the neck. Chronic enlargement of the cervical glands, he believes to be due, in 80 per cent. of the cases, to tuberculous infection from the tonsils and naso-pharyngeal mucous membrane. This may be true, but when, on these grounds he practises and enthusiastically recommends the removal of the tonsils, and erasion of the naso-pharyngeal mucous membrane, whether there be enlargement of the tonsils and adenoid vegetations or not, as a preliminary to excision of the glands, one cannot help feeling that it is quite possible that by so doing the patient may be deprived of one of the most active physiological barriers to general infection. There is some reason to believe that the *normal* collection of adenoid tissue in the naso-pharynx and fauces is not only itself proof against any ordinary infection by tuberculous bacilli, but that it acts as a physiological "destructor" for the bacilli which are carried to it after gaining entrance through breaches of surface in the nasal and pharyngeal mucous membrane.

We may call to mind that Krückmann has shown that the cervical lymphatics become infected either from the tonsils downward or from the glands at the pulmonary tubes upward by retrogression, and though the tonsils may be primarily affected occasionally, in nearly all fatal cases of pulmonary phthisis he found the tonsils had become involved, yet the evidence in many cases showed that the lungs were primarily affected.

It should be remembered that the pharyngeal tonsil is normally well developed in young children, and that it generally atrophies at or about the time of puberty. Sir William Dalby[1] says, in regard to adenoids, the aspect of the matter is "so changed that there is an appreciable risk of its becoming regarded *by those who have no real knowledge*, as a universal inheritance of man. This idea of adenoids must have become very general with the public when children (in whom they are absent) are brought for their removal to relieve stammering and stuttering, or imperfect articulation, due rather to failure in hearing or imperfect brain development. I have even known a lady, over sixty years of age, in whom it was proposed to 'scrape her pharynx' for sub-acute catarrh of the middle ear. If an imagination can be so active as to suggest adenoids in such an instance, we may reasonably infer that some pharynges may, in the exuberance of zeal, be submitted to active measures with questionable advantage."

If a child, who is presented to us suffering from *slighter* degrees of hypertrophy, has nearly reached this age, it is well to defer operation, as the growths will very often undergo spontaneous atrophy. Thus

Hermet[2] (Paris) found that in one hundred and three cases of adenoids under his observation for several years, operation was only found necessary in fourteen. On the other hand, in young children, nasal obstruction due to post-nasal growths, and especially if the ears are affected, the operation of removal should be strenuously urged as necessary, not only on account of the life-long deafness and defects in development that will probably result if nature be allowed to take its course, but on account of the increased risk of infection by many and various micro-organisms. Moreover, in cases of hypertrophy of the faucial tonsils, in children, it will generally be found that the pharyngeal tonsil is likewise enlarged, and then tonsillotomy will not relieve the symptoms and remove the dangers to which the patient is exposed.

Harrison Allen[3] has made the interesting observation that in a number of cases in his practice, when parents have agreed to an operation for the removal of adenoids, they have suggested that while the child was anæsthetized, the operation of circumcision might also be performed. The number of times in which the association of adenoid mass is associated with phimosis is so great as to lead him to believe that some connection exists between the two conditions.

Methods of Removal.—The usual number of additions to the already long list of instruments for operating on adenoids have been introduced during the past year. Hobbs,[4] of Attalanta, Pa., has introduced post-nasal forceps, and anterior nasal forceps with modified old artery forceps handles.

Bendelack Hewetson[5] has introduced a good form of curette, with which he has had a large experience.

Speaking of the use of forceps, Barr[6] remarks: "The index finger of the left hand is introduced into the naso-pharynx with the back of the hand downwards and forwards, so as to guide the blade of the forceps to the individual growths. In this way the forceps are introduced several times, and the growths individually pulled or cut away until, as informed by the finger, they are all removed. This sounds very satisfactory, but in practice it is often found to be no easy matter to accommodate the index finger and the blades of the forceps in the small naso-pharynx of a child so as to manipulate freely, and the efforts to do so often lead to much bruising and injury to the parts. When operating with the forceps, while the head hangs over the end of the table especially, great care should be taken to avoid laying hold of the septum. Indeed, in this position the use of the forceps is unjustifiable, unless one is able with the left index finger to guide accurately the blades of the forceps." . . . The blades of the forceps should have their cutting edges above and behind, while there

is a free space in front, so as to lessen the chance of catching hold of the septum of the nose.

Death from the Operation.—Sandford[7] reports a case of a boy, aged eleven, whose naso-pharynx was scraped for adenoids under a 10 per cent. cocaine solution, the same procedure having been previously done without bad result. Four hours after the operation the patient had a rapid pulse, and seemed unstrung. An hour and a half later the lad had a convulsive attack, followed shortly by another fit, and death resulted, apparently from asphyxia. Sandford was of opinion that the first convulsion was of (nasal) reflex origin, coming on as the effects of the cocaine passed off, and that during this basal hæmorrhage took place, causing the second and fatal attack. Similar instances of death, due to central trouble, were mentioned by Mayo Collier and Lennox Browne in the course of discussion on Sandford's report.

Recurrence after Operation.—F. E. Hopkins[8] relates several instances of recurrence after thorough removal of adenoids. He correctly states that "there are few operators of experience, who are not able to recall one or more such cases." That recurrence cannot always be attributed to an insufficient removal of tissue at a former operation is well exemplified by one of his recorded cases. He operated on Julia F., aged fourteen, in July, 1893, removing both tonsils and clearing out the naso-pharynx, with gratifying result. But by May, 1894, the former symptoms had returned, and the naso-pharynx contained a large mass of lymphoid tissue, and nasal respiration was almost impossible. He again cleared out the naso-pharynx under ether, and so thorough was the removal, that he feared the patient might suffer from the apparently too radical removal, though no bad results followed this, the most radical he had ever performed, for after the second removal nothing but bare bone could be felt in the vault of the pharynx. Yet in December, 1894, the patient returned, and the growth had recurred, and there was again a lack of vocal resonance and impairment of hearing.

Hopkins quotes the remarks of Butlin,[9] who has stated that although he had operated for removal very many times, and many of his cases had been under observation from one to seven years, he was cognizant of only one case in which there was undoubted recurrence after complete and careful removal. Mark Hovell[10] cites an instance of a patient, who had twice undergone operation before she came under his care, in whom he had found it necessary to repeat the operation three times on account of redevelopment of growths, while Felix Semon[11] states that, in his experience, in no class of cases is a repetition of the operation more frequently required than in those in which

the finger-nail has been used as the instrument for removal. In the discussion following Hopkins' paper, John Wright agreed that recurrence occasionally arose, even after complete eradication and very pertinently remarked that it was surprising that this should occur so rarely, when we bear in mind the pathology of these growths, for the lymphoid cells of which they are almost entirely composed, infiltrate all the layers of the mucous membrane down to the periosteum. Therefore, when we speak of the complete removal of adenoid growths from the naso-pharynx, if we took the expression literally, this would mean skinning the entire region down to the bone, and of course very few are prepared to do so radical an operation; furthermore, some very disastrous results have been reported from too free removal. A number of cases had come under his observation in which there had been recurrence of tonsilar hypertrophy after removal. Bryson Delavan considers that in cases where so-called recurrence takes place, one of two factors are apt to be the cause, first: Incomplete removal, large folds of adenoid tissue having been left which, before operation, had been compressed by the other masses; second: In rare cases, though not unknown, where there is a persistent tendency to recurrence, often due apparently to the presence of the tuberculous diathesis or to inherited syphilis. He emphasised the importance of rectifying any concomitant stenosis of the nasal passages.

Sir William Dalby[12] states that if adenoid hypertrophy exists early in life in a moderate degree, the mischievous increase often takes place rapidly in a few months, and the exciting cause of the rapid increase is frequently an attack of measles, scarlet fever, diphtheria, or whooping cough. Moreover, when in very early life the pharynx is cleared absolutely, there will occur sometimes, either with or without these exciting causes, a renewed activity, so that we occasionally find a child, say five years old, in whom the growths have been removed, remaining perfectly free for several years, and active growth again commencing some time before the arrival of puberty.

Choice of Anæsthetic.—The first essential in operating on adenoids is, place the patient in such a position that blood cannot be drawn into the larynx and asphyxiate the patient, and thus some operators prefer an anæsthetic which can be administered in the upright position, while others prefer to place the patient in the prone position, either with the head hanging well over the end of the table, or with the patient lying on his side with the head low. In the former position, nitrous oxide gas and ether (combined) suggest themselves as the most suitable anæsthetic, but in the opinion of many physicians and

surgeons, myself included, it is better to resort to an anæsthetic which does not necessitate such a rapid operation, which must often result in being incomplete. Sir Wm. Dalby strongly commends the administration of ether, and raising the patient when anæsthetised, so that his body is not upright, but leaning forward at about an angle of 40° from the perpendicular, the legs being pendant on either side of the narrow couch, on which he is therefore straddled. In this position he removes the growths by steel-nail or ring knife. He says that the leaning forward position of the patient is important to note, because unquestionably in consequence of malposition while removing adenoid growths several accidents (if such a term is allowable) have occurred, death being due to asphyxiation from the entrance of blood into the trachea, and also because he has never known a case in his practice of blood entering the larynx after employing his rectangular method for over nine years; at the same time he recognizes that there are at least two other positions of safety in this respect.

Barr[13] says that there is no doubt that a general anæsthetic adds a slight element of risk to this operation, which, without an anæsthetic, may be said to be absolutely free from danger. In regard to the position of the patient during anæsthesia, most surgeons operate with the patient hanging backwards over the end of the operating table, so that blood or fragments of detached growth may pass out through the anterior nares or mouth, though this dependent position for the time being tends to increase the bleeding; some operators, such as Mr. Hovell, prefer that the head should be on a level with the body, and trust to the rapid mopping up of the blood with sponges. Mr. Butlin and Bendelack Hewetson[14] operate with the patient on his side, the thighs being flexed and the head bent a little forward on a low pillow. Barr goes on to say that in the curette operation he always operates with the dependent position of the patient's head, and even then rapid removal of the blood by sponges is necessary to prevent the suction of blood into the trachea. The large quantity of frothy secretion which is usually poured into the throat, and the more profuse bleeding, due to great venous turgidity, are highly objectionable features of ether narcosis, while the laboured and stertorous breathing, instead of being an advantage, may rather tend to suck blood and frothy secretion into the larynx. While he has operated both with ether and nitrous oxide gas as anæsthetics, his experience has led him to prefer chloroform, cautiously and sparingly given in a mask, with a plentiful supply of air, care being taken that while the corneal reflex is abolished the cough and swallowing reflex should not be entirely in abeyance, and yet, while avoiding deep narcosis, it

is important that it should be deep enough to relax the muscles of the face, and to prevent retching during the operation.

For further information of the question of anæsthetics in adenoid operations, the reader may refer to the report of the discussion on this point at the Harveian[15] and London Laryngological Societies,[16] and to Wilson's[17] and Siegmund Moritz's[18] articles. The latter author draws attention to the value of antipyrin as a local anæsthetic (as advocated by Wroblowski, of Warsaw[19]). Either the parts to be operated on are painted with solution of antipyrin (2 parts), cocaine (1 part), water to 10 parts ; or, better still, they are painted with cocaine solution (10 per cent.), and a few minutes after, in each place, two minims of a 50 per cent. solution of antipyrin is injected under the mucous membrane. Moritz confirms Wroblowski's statement that not only tonsils and adenoid vegetations may in this way be removed without pain, but that there is no pain afterwards. He also reminds us of the value of ethyl-bromide as a general anæsthetic for adenoids, an anæsthetic which Hermet[20] considers is especially indicated if the patient suffers from heart disease.

REFERENCES.—[1] "Lancet," Nov. 30, 1895 ; [2] "Med. Week.," April 19, 1895 ; [3] "Journ. of Amer. Med. Sci.," June, 1895, p. 639 ; [4] "Journ. of Lar.," Feb., 1895 ; [5] "Brit. Med. Journ.," April 6, 1895 ; [6] "Lancet," Sept. 14, 1895 ; [7] "Med. Week.," vol. ii., No. 29, 1894 ; [8] "New York Med. Rec.," Jan. 26, 1895 ; [9] "Brit. Med. Journ.," Feb. 18, 1893 ; [10] Ibid. ; [11] Ibid. ; [12] "Lancet.," Nov., 30, 1895 ; [13] Loc. cit. ; [14] "Brit. Med. Journ.," April 26, 1895 ; [15] "Lancet," Feb. 18, 1893 ; [16] "Brit. Med. Journ.," April 21, 1894 ; [17] "Med. Chron.," Feb., 1895 ; [18] Ibid., Aug., 1894 ; [19] "Arch. f. Lar. u. Rh. (Fräubels), 1894, I., p. 363 ; [20] "Med. Week.," April 19, 1895.

PHARYNX (Neuroses of the). *P. Watson Williams, M.D., Bristol.*

Pharyngeal Spasm in Tabes.—Courmont[1] relates the case of a man of sixty-two years of age, tabetic for twenty years, with no history of syphilis, in whom there was veritable tonic spasm of the pharynx absolutely analogous to laryngeal crises. Although there was no laryngeal or œsophageal spasm nor gastric crises, the symptoms were so intense that food or drink could not be administered, and death appeared imminent. The muscles of the posterior and lateral part of the pharynx were alike tetanized. The symptoms ceased abruptly after suspension, never returning after the first sitting ; hence it was inferred that the spasms must have been due to peripheral lesion. Magnan[2] relates previous observations of similar cases by Jean, Lizé, and Oppenheim, as well as the case of Courmont.

Neuro-trophic lesion of the Velum Palati, Uvula, and Tonsil.—Westbrook[3] records an interesting case of multiple neuritis, seen also with

Landon Carter Gray. He presented an ulcer on the left tonsil which in two weeks had spread so rapidly as to denude the entire buccal surface of the left tonsil, and extended to the outer two-thirds of the anterior pillar of the fauces, which it threatened to destroy, thence invading the surface of the palate almost as far as the base of the uvula. The surface was very irregular; all the structures involved were considerably swollen and of a dusky crimson hue, but not indurated. The hyperæsthesia was great, and the pain marked ; but the patient also suffered from intense neuralgia of the tongue, ear, nose, and face, of the left side, and the hyperæsthesia of the face was so great that the slightest touch gave him agonizing pain.

Later, it was found that the posterior surface of the velum was involved in the ulceration. The deep crimson colour often extended beyond the ulcer to the hard palate, and in various directions, blending gradually with normal mucous membrane. The uvula was somewhat œdematous, the submaxillary glands of the left side enlarged, and the gums swollen and soft.

The diagnosis involved the exclusion of carcinoma, lupus, and syphilis ; the lesion which was at once suggested by the appearance was syphilitic phagedæna, but there was no history of syphilis.

The patient was put on **Iodide of Potassium, Bichloride of Mercury,** and large doses of **Bicarbonate of Sodium** and **Potassium,** and **Salicylate of Sodium.** Locally, after cocainization, the ulcer was treated with **Seiler's Solution,** half strength, **Carbolic Solution** nebulized, **Peroxide of Hydrogen** sprays, and later with pure **Eucalyptol,** and **Nitrate of Silver Solution.** He recovered at the end of four weeks.

REFERENCES.—[1] "Rév. de Méd.," Sept., 1894; "Amer. Journ. of Med. Sci.," May, 1895 ; [2] "Journ. of Laryngol.," Dec., 1894 ; [3] "New York Med. Journ.," Nov. 17, 1894.

PHTHISIS. (See "Tuberculosis, Pulmonary," also "Digestion, Disorders of.")

PITYRIASIS CAPITIS. *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

Unna[1] gives, as the best treatment for this condition, **Sulphur** 1 to 3 parts, **Simple Ointment** 30 parts. Before applying it, the head is to be thoroughly washed with **Potash Soap.** It should be applied at least twice a week, and should be done by some one else than the patient himself. When there is much falling off of the hair, 2 to 10 per cent. of **Cantharides Tincture** should be added. Other remedies are **Resorcin, Sublimate** or **Sulpho-phenate of Zinc.** [We have had great benefit in similar cases from the application of **Pyrogallic Acid** ʒj to

℥j. If applied at night, and washed off in the morning with soap spirit, there is, in most cases, little discoloration.—N.W.]

REFERENCE.—[1] "Revue de Therap. Medico-Chirurgicale," June, 1894.

PITYRIASIS RUBRA. *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

Dhargalkher[1] reports a case treated by **Solanum Nigrum.** A vegetable diet was ordered, and the patient was said to be cured in a fortnight. This plant has a reputation among Sanskrit authors, and is given in doses of 30 to 60 grammes.

Schatchard[2] reports a case of pityriasis rubra which improved immensely under **Thyroid Tabloids.** Arsenic had been given in vain.

REFERENCES.—[1] "Indian Med. and Surg. Review"; [2] "Brit. Med. Journ.," March 30, 1895.

PITYRIASIS VERSICOLOR. *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

Leistikow[1] recommends an ointment of **Bisulphite of Lime,** made up with **Lanolin** and **Vaseline** to a sort of cold cream, followed by the prolonged use of **Eichhoff's Quinine Soap.**

Bodin[2] says that, in slight cases, painting with **Iodine** is sufficient, afterwards washing the parts with soap so as to get rid of the diseased epidermis. When the disease is extensive it should be washed in the morning with soap and hot water, and in the evening the following ointment should be applied: **Resorcin** and **Salicyic Acid** of each 1·0; **Sulph. Precip.** 5·0; **Lanolini, Vaselini, Sebi** āā 25·0; **Sulphur Baths** are of use. The clothes must be thoroughly disinfected.

REFERENCES.—[1] "Monatshefte"; [2] "Médecin Moderne," 68, 1893.

Synopsis.—(Vol. 1895, p. 479.) **Chrysarobin and Tincture of Iodine** are good, but **Losophan** has fewer drawbacks. **Benzine** is much used in France.

PLEURISY. *R. Shingleton Smith, M.D., B.Sc., F.R.C.P.*

Diagnosis of Pleuritic Effusion.—H. B. Whitney, M.D., Tr. Colorado M. Soc., 1894, comments on the diagnostic value of the curve which bounds an effusion. He describes three characteristic types of curve according to the amount of fluid.

In small effusions the line beginning at the spine extends almost horizontally for a varying distance, usually to a point at, or, in front of the posterior axillary line, where it drops by a rather abrupt curve to the base of the thorax.

In moderate effusions the curve, starting behind somewhere along the middle third of the dorsal spine, extends first outward, then more

and more abruptly upward, across the scapula to the region of the shoulder. In front the line re-appears, and may drop quite abruptly from the upper axilla to the thoracic base near the apex of the heart. Its characteristic feature is that it has the highest point in the axilla.

In large effusions the upper border loses its distinctive letter of S-form, and becomes a simple curve with upward concavity.

Fernet[1] states that in pneumococcic pleurisy the onset is sudden, the disease being ushered in by a single prolonged chill. The fever sets in at once and is considerable, 39° to 40° C. with very rapid pulse : later there is sharp and persistent pain in the side. The patient is seized with a hacking cough, which is sometimes dry, and sometimes accompanied by slight, viscid, and occasionally sanguinolent expectoration. Towards the end of the third day naso-labial herpes sometimes supervenes : the tongue is coated with a thick yellowish substance, and is red on the margins. All these characters are almost the same as in pneumonia, but instead of the physical signs of this disease, we find those of pleurisy with effusion.

Staphylococcic pleurisy has very different characters. It appears to develop much less acutely than the pneumococcic form. The patients are not constrained to leave their usual occupations until three weeks or a month have elapsed after the onset of the symptoms, and then they complain particularly of great oppression due to the fact that the effusion is already of considerable amount. The liquid withdrawn by puncture is serous, and is frequently reproduced several times over. Recovery is the rule, but the disease drags on for one or two months, and even longer. The evolution of this form of pleurisy, therefore, is subacute rather than acute, and it may be even chronic.

After alluding to the ordinary connection between pleurisy and tubercular processes, Alex. James[2] refers particularly to the pleurisy, which may be precedent, instead of succedent, to tubercular diseases. He believes that the pleurisy is often the primary condition. Believing that the soil is more important than the germ, he interprets the occurrence of pleurisy as indicating a lowered nutritive power which renders the tissues specially vulnerable to the tubercle organism.

From the results of injections of pleuritic serum on guinea pigs, Eichhorst[3] infers that two-thirds of the cases of serous pleurisy are tuberculous, and this view is supported by Bass, who found that at the end of five years from the attack, only 33 per cent. of such patients were still living.

TREATMENT.—M. Gilbert[4], of Geneva, has recounted the results of his observations on the treatment of pleurisy of tubercular origin, by the injection of **Serum** taken from the exudation of the patient himself.

He says that these pleuritic exudations in tubercular subjects contain a substance analogous to Koch's tuberculine. He plunges a hypodermic needle (previously made carefully aseptic) into the pleural cavity, and withdraws, with the syringe, one cubic centimètre of the pleuritic fluid. The needle is then partially withdrawn in such a manner that the fluid can be distributed into the subcutaneous cellular tissue. In twenty-one cases so treated (of recent origin—eight days or less) all except two experienced beneficial results. The injection was followed by an active febrile reaction, the exudation little by little resolved, and the general health improved. All these patients were cured in a fortnight or three weeks. Gilbert concludes that the method is easy of performance and harmless, but its mode of action somewhat unexplained.

Oil injections in dry pleurisy have been tried by Cérenville[5], of Lausanne, with the object of imitating nature in providing a lubricating fluid; 30 drops of sterilised **Olive Oil** appears to be sufficient for the purpose, as it is very diffusible, and rapidly spreads over a very large part of the surface of the lung. In eight out of ten cases it appears to have given some relief, and to have expedited the cure.

Dujardin-Beaumetz[6] upholds the views entertained by Galippe regarding **Cantharides** and **Cantharidine,** believing these remedies to exercise a decided influence over inflammatory phenomena. The treatment, as indicated, may be modified, however, to suit individual cases. For, instance, in diaphragmatic pleurisies, in which dyspnœic disturbances and pain are most marked, the subcutaneous administration of **Morphine** is indicated, producing good results, although the drug does not directly affect the march of the disease.

REFERENCES.—[1]"The Med. Week.," March 1, 1895; [2]"Ed. Med. Journ.," Sept., 1895; [3]"Practitioner," Aug., 1895; [4]"Gaz. des Hôpitaux," No. 60, 1894; [5]"Lancet," Dec. 1, 1894; [6]"Therap. Gaz.," Dec. 15, 1894.

PNEUMONIA. *R. Shingleton Smith, M.D., B.Sc., F.R.C.P.*

Etiology.—In giving an outline of the abundant literature on pneumonia, and its treatment, one cannot but feel that in spite of the numerous and important recent discoveries in the etiology of the disease, the modern views as to its nature and etiology have not yet given any radical change in its treatment, or the results thereof. Douglas Powell[1] in his excellent *résumé* of the present aspects of the question in a paper read before the British Medical Association in London, after expressing much regret that he could not record any practical abatement in the mortality of the disease, emphasised the fact that probably 20 per cent. of the cases were attributable to

surface chills, contracted through hygienic imprudence, especially amongst those past middle life, and this imprudence was likely to be encouraged by the fatalistic and inadequate view, that the reception of a microbe was alone sufficient to cause the disease. After having reviewed other conditions besides chills, such as depressed vitality, privation, the uræmic state, rheumatic conditions, diabetes, etc., Dr. Powell passed on to the question: How far was the reception and cultivation of a specific organism essential? Friedlander's, Fraenkel's and Klein's microbes were contending for the honour of disseminating pneumonia, the pneumo-coccus of Fraenkel being most in favour. The speaker's view was that undoubtedly pneumonia was a specific germinal (and therefore a microbic) disease, but the pneumo-coccus could not as yet be altogether accepted as *the* germ of pneumonia.

The most important evidence in the bacteriology of pneumonia was given in Washbourn's[2] paper on the pneumo-coccus at the Pathological Society, where it was shewn that Friedlander's pneumo-coccus was only of accidental occurrence, that the pneumo-coccus of Salamon and Fraenkel was the real cause of the disease, and in addition to causing acute lobar pneumonia, it appeared to be the cause of some cases of lobular pneumonia, in which disease other bacteria, especially streptococci, were frequently important etiological factors. A. E. Wright[3], in a paper on the bacteriology and pathological chemistry of pneumonia, describes croupous pneumonia as primarily a local inflammatory process, and the lesions which characterize it as the result of an acute phagocytic reaction of the organism, in response to a bacterial infection of the lungs. He considers the emigration of the white blood corpuscles into the alveoli of the lungs to be entirely compatible with the emigration of white blood corpuscles into the subcutaneous tissues, which constitutes an ordinary abscess. The phenomena of crisis were further described in detail, and the general tendency of the evidence was in favour of the idea that the fall of temperature in crisis is accounted for by a process of phagocytosis, the phagocytic reaction being the essence of the crisis. Dr. Wright further pointed out that the nucleo-albumen absorbed from the lung after crisis is the cause of many cases of intra-vascular thrombosis.

E. Mosny[4] reports to the Biological Society (December 29th, 1894), some experiments to determine the influence exerted on the pneumo-coccus by various other microbes, and the result in every case was that the association of living cultures of the staphylo-coccus aureus with living cultures of the pneumo-coccus was to increase the virulence of the latter.

Ch. Talamon[5] considers that the question of contagion in pneumonia cannot now be doubted, and he gives several cases in point. The severity of the cases points to an exaltation of the virulence of the microbe during its sojourn in the lungs of the contagion-giving patient. The establishment of the infectious bacterial character of the disease naturally leads to the question of treatment by **Serum.** After numerous experiments in animals of a satisfactory character attempts to treat patients in this way have been made. F. and G. Klemperer[6] report twelve cases of pneumonia treated with the serum of rabbits rendered artificially immune. They also inoculated patients with the serum of other patients suffering from pneumonia obtained immediately after the crisis. The results of these and other cases reported by Hughes and Carter[7] are such as to justify further trials and investigations. Leucocytosis in pneumonia was long ago noticed by Piorry and Virchow. Billings[8] has again directed attention to the fact, but he fails to establish any important prognostic inference, either from their presence in excess or from their total absence, which is as a rule unfavourable. H. A. Hare[9] sums up the etiology by remarking "that pneumonia of the croupous type is an infectious disease produced by the micro-organism now known as the micrococcus lanceolatus."

Infectious Pneumonia.—Surgeon Major Duncan, M.D.,[10] describes an epidemic in India, occurring ten years ago, and deduces the idea that the period of incubation may be as long as eleven days. Garber[11] reports a collected series of cases, which teach that pneumonia is a communicable disease, and he advocates the destruction of sputum and the sterilisation of clothing and bedding just as is done in other contagious diseases. Russell McLean[12] chronicles an epidemic of thirty-five cases occurring in the spring of 1893, also other epidemics of thirty-one cases in one ship in 1891-92, and thirty-nine cases in the same ship in 1892-93.

Treatment.—H. A. Hare[13] discusses the question whether the views on treatment held ten years ago are tenable to-day. After considering whether it is possible to regulate or abort an attack of acute croupous pneumonia, he states that the remedies which he believes are the three sheet-anchors for pneumonia after the exudation has taken place are **Digitalis, Strychnine** and **Belladonna.** "Of these three I hardly know which to place first, but I am certain that the strychnine is the only one which we can use alone with advantage. The digitalis nearly always fails to stimulate the vaso-motor system sufficiently, and the belladonna has to be added to regulate the blood flow by its vascular action. Often, when using digitalis in pneumonia,

the finger upon the pulse shows it to be full, soft, and boggy, if such a term may be used: and while the regularity and slowness, as well as the volume, may indicate the full action of digitalis, the patient fails to receive benefit and may have a leaky skin. Under these circumstances belladonna, given in the dose of about 5 drops of the tincture every three or four hours, while the digitalis is given in 10-drop doses every six or eight hours, will produce marked improvement."

Percy Kidd[14] strongly advises hypodermic injections of strychnine, $\frac{1}{16}$ of a grain being dissolved in 4 or 5 minims of water, and repeated every two hours until 3 or 4 doses have been given. These injections have been more satisfactory than alcoholic stimulation for the relief of the delirium of pneumonia.

Leech[15] observes that we cannot at present accept Petresco's rosy views of the general value of digitalis, yet we may conclude that under certain conditions its exhibition in larger doses is desirable; and that such doses do not have the lethal effect in pneumonia which our knowledge of the effects of the drug under other circumstances has led us to fear. Kerr[16] protests against the indiscriminate use of digitalis, and urges that the condition of the pulse should be our guide; where any sign of heart weakness exists digitalis should be given, and the simultaneous administration of strychnine will assist its action. Gundrum,[17] Escondido, Cal., in his excellent and critical summary remarks: When digitalis is used timely, properly, and judiciously, there is no drug that will increase the force of the heart so surely, continue its action for so great a length of time, and enable it to sustain a strain so safely. To wait with the administration of digitalis until the "crisis or period of strain" comes on—until the heart is giving way—is to court failure and bring the remedy into disrepute; and even when given thus late it is usually administered by way of the stomach, where it may lie for hours, instead of being given hypodermically, as it should be. But the greatest and most serious objection to waiting until we notice the heart flagging is, that the full tonic power of digitalis on the heart is not realized until from twenty-four to forty-eight hours, in which space of time the heart in too many instances succumbs to its burden and the patient goes to rest. The time to begin the administration of digitalis is at the beginning of the disease, and continue it until the crisis is safely passed and the patient is on the safe road of convalescence. Lindsay Porteous,[18] Yonkers, N.Y., after remarking that the tendency is to resolution and not to dissolution, adds that "the drugs upon which we pin our faith are **Digitalis, Chloral** and **Ammonia**."

The writer[19] of this abstract has often been astonished to find how

little effect digitalis, in what are commonly considered to be full doses, appears to have in modifying the natural history of pneumonia, and he has never had the good fortune to see anything which could be spoken of as "jugulation," although half-ounce doses of the English infusion (28 grains to ten ounces) have been given every hour for the whole twenty-four hours, but if the statements of Petresco are confirmed by other observers under varying circumstances we should hear no more of the folly of trusting to nature in the treatment of a malady where nature gives in hospital cases a mortality of 25 per cent.

Ice Cradling has been tested by P. Blaikie Smith[20] in the Aberdeen Royal Infirmary, but the results were of rather a negative character. He concludes his paper by saying that "he is disposed to recommend it as a mild form of antipyretic treatment, suitable for sthenic cases of acute pneumonia, easy of application, not violent in its effects, comfortable and not fatiguing to the patient, and capable of being carried out in any disease where a restraining influence on pyrexia and its attendant symptoms is desired." W. Fred Jackson[21] of Brockville, Ont., gives excellent results from the routine application of **Cold Compresses**, and he believes "that the lowering of bodily temperature, quieting of the circulation, the relief of pain, and the general bodily comfort promoted by the application of cold water compresses, when once observed, will carry conviction to the most incredulous person." Thomas J. Mays[22] reports a death rate of only 2·7 per cent. in a group of cases amounting to seventy-four in which cold water treatment had been tried, and hence he inferred that this treatment is ten times better than other methods. He believed that the treatment tends to circumscribe and abort the exudative processes in the lung.

Gundrum,[23] expresses the general view in favour of cold water as opposed to antipyretic drugs, in the following terms: As no antipyretic agent which has a depressing effect on the respiratory and cardiac motor centres should ever be used in the treatment of pneumonia, we have but one agent left us that will accomplish our purpose with safety to the patient, and that agent is cold water in some form or other. It is the only agent that will abstract the heat and also at the same time innervate the nervous system and increase the dynamic force of the respiratory and cardiac motor centres.

Douglas Powell[24] remarked: The pyrexia of pneumonia was brief, normal to the disease, and unfavourable to microbic activity, and, therefore, its treatment by antipyretics was harmful. The development of the germ was checked by a high temperature. In most of

the favourable cases, *i.e.*, in normal pneumonia, this generally rose to 104°, and at this temperature the growth of the germ was checked. In Powell's opinion the reduction of temperature by drugs that are not distinctly inimical to micro-organisms was distinctly harmful.

Crombie[25] had given 4 grains of **Chloride of Calcium** every four hours, and the uniformity of the apparent response to the treatment encouraged him to urge for it an adequate trial. Moir[26] gave the drug in much larger doses, one case taking 1 ounce in seven days, the second taking 7 drachms in five days, and was satisfied with the results.

Many other details are fully described in one or other of the following papers: Robinson—General summary of treatment, "New York Med. Journ.," Aug. 25, 1894; Leech, "Med. Chron.," Oct., 1894; Gundrum, "Therap. Gaz.," June 15, 1895; further details of many of the papers are given in abstract—"The Hospital," April 20, 1895, pp. 45, 46.

REFERENCES.—[1] "Lancet," Aug. 10, p. 355 1895,; [2] Ibid., Feb. 9, 1895; [3] "Brit. Med. Journ.," Feb. 9, 1895, p. 303; [4] "The Med Week," Jan. 4, 1895; [5] "Méd. Mod.," Mar. 20, 1895, Epit. "Brit. Med. Journ.," April 13, 1895; [6] "L'Union Médicale," Dec. 6, 1894; [7] "Therapeutic Gazette," June, 1894; [8] "Medical Record," April 20, 1895; [9] "Therap. Gaz.," April 15, 1895; [10] "Lancet," Jan. 19, 1895; [11] "Am. Med. Surg. Bulletin," Jan., 1895; [12] "Ed. Med. Journ.," Dec., 1894; [13] "Therap. Gaz.," Aprll 15, 1895; [14] "Pract.," 1894, No. 315; [15] "Med. Chron.," 1894, No. 1, p. 12; [16] "Journ. of the Amer. Assoc.," July 28, 1894; [17] "Therapeutic Gaz.," June 15, 1895; [18] "New York Med. Journ.," May 11, 1895; [19] "Bristol Medico-Chirurg. Journ.," vol. xii., p. 298; [20] "Brit. Med. Journ.," May 11, 1895; [21] "Therap. Gaz.," Nov. 15, 1894; [22] "New York Med. Journ.," Nov. 17, 1894; [23] "Therap. Gaz.," June 15, 1895; [24] "Lancet," Aug. 10, 1895; [25] "Practitioner," April, 1893, and Nov., 1894; [26] "Med. Chron.," Dec., 1894.

POLYPUS RECTI AND POLYPOID GROWTHS.

Herbert William Allingham, F.R.C.S., Eng.

A polypus is a pedunculated growth attached to the mucous membrane of the rectum, and generally situated between one and two inches from the anus. Its favourite, but not its only situation, is on the dorsal portion of the rectum.

Several kinds have been described, but the most important are the *soft* or *gelatinous polypus*, the *fibrous polypus* and *disseminated polypi*, which appear in considerable numbers and sometimes affect several members of one family.

The soft or gelatinous polypi are small vascular tumours with lengthy pedicles, are of the size of a raspberry, and bleed very freely.

Some fibrous polypi are very hard, and nearly as large as a walnut

creaking when incised. The pedicle is generally about one and a half inches long, and is always attached above the sphincters.

The soft polypus is more usually found in *children*, and the symptoms are frequent desire to go to stool, with tenesmus, occasional discharge of blood and mucus, and the protrusion from, or appearance at the anus of a fleshy mass when the bowels are acting. When the pedicle is long, the polypus protrudes at stool and has to be returned. In children no doubt polypi are often detached on the passage of hard motions, and are thus cured without operation.

In the *adult* no symptom is noted until the peduncle has become long enough to protrude, or grasp the external sphincter when the bowels act. The polypus is usually of the hard fibrous kind, comes down near to the anus, and may groove the fæces. The protrusion causes pain, irritation and spasm, and may lead to an ulcer.

On examination the finger should be first passed up as far as possible, and then be withdrawn, being swept round the whole rectal surface. The peduncle will thus be touched and the polypus be discovered. Examination after an injection will clear up any doubt as to whether the complaint is polypus, internal piles, or procidentia recti.

The only *treatment* is the removal of the growth. The simplest plan is to seize the peduncle close to its base with forceps and gently twist the polypus till it comes away. If the polypus is large a ligature may be necessary. The peduncle is ligatured and the polypus cut off. Rest is desirable till the ligature separates.

Polypoid Growths are small growths protruding from the mucous membrane of the rectum, but not absolutely pedunculated, and rarely coming outside the anus. They often cause or foster pruritus ani and fissure.

There are two main kinds : one consists of soft, freely movable, little tags of mucous membrane never over an inch long, and usually to be found on a pile or fissure. The other variety is hard and nipple-like, with broad base and hard and pointed apex. The chief symptom is a watery, moist condition of the anus. They should be removed by scissors.

It is thus seen that these growths in themselves are of little importance, but if they are not seen or neglected, the patient may suffer from pruritus ani or fissure, and not be cured.

POTT'S DISEASE. *Priestley Leech, M.D., F.R.C.S.*

TREATMENT.—Phelps[1] in an interesting and valuable paper advises the following treatment. In lateral spinal curvature develop muscles of the back by massage and proper gymnastic exercises ; improve

general condition by appropriate food and exercise, and if the deviation of the spine amounts to more than half the diameter of the vertebra, a support to prevent absorption of the vertebra at the point of curvature is absolutely demanded. In Pott's disease the principle of treatment is the reverse; it consists of absolute immobilisation and extension to the point of comfort to relieve the pressure between the diseased vertebræ. The corset which is adjusted must not be removed. No brace or corset of any description can be applied effectively to a child under three years of age, owing to the narrow hips, and for children under this age Phelps has devised a plaster of Paris portable bed in which the child is placed: this permits removal into the open air. Bonet's wire cuirass is a most efficient apparatus, but is more expensive than the plaster portable bed, and no better. If the disease is above the third dorsal vertebra, no corset or brace can support the spine without the aid of a jury mast.

He uses crinoline for the plaster bandages. The jacket must be worn for six months to a year without removal.

REFERENCES.—[1] "Journal of the American Medical Association," Oct. 27, 1894, "Therap. Gazette," Dec. 15, 1894.

PRÆPHTHISIS.

Synopsis.—(Vol. 1895, p. 425.) General hygienic measures are indicated, change of air, etc. General desire for sour, salted and smoked articles of diet is displayed, also for onions; butter is liked, but rarely any other fat, if any, that of pork is usually preferred; probably it is best to treat this as a constitutional craving for necessary chemical molecules, which should therefore be supplied by indulging this appetite.

PREGNANCY (Disorders of). *Theophilus Parvin, M.D., Philadelphia.*

Vomiting.—A writer in the "Lancet," says: "I have not failed once for many years, by a single **Vesication** over the fourth and fifth dorsal vertebræ, to put an end at once to the sickness of pregnancy for the whole remaining period of gestation, no matter at what stage I was consulted.

Stuver[1] recommends the following in the obstinate vomiting of pregnancy:—

℞				
Cocaine	o gr. 12	Distilled Water	gr. 90
Antipyrin	gr. 1		

Sig.—To be taken by spoonfuls every half hour, or every hour.

Champetier de Ribes[2] commends the use of **Electricity,** as employed by Gautier, that is by voltaism, with feeble intensity and long duration, of the right pneumogastric. Each *séance* lasts from one quarter to half an hour. The positive electrode is placed between the clavicular insertions of the sterno-mastoid, and the negative at the umbilicus.

Renal Disease of Pregnancy.—Hermann[3] divides such diseases into acute and chronic. Convulsions may occur in either, but more frequently in the former. In this, the acute form, the quantity of urine is lessened, and the amount of albumen is great.

Improvement is shown by increased flow of urine, which contains less albumen and more urea.

Either the acute or chronic form of the disease may occur in a woman hitherto healthy, or in one previously suffering from renal disease.

Before resorting to the induction of labour, there should be treatment by absolute **Milk Diet, Hot Baths** to produce diaphoresis, and **Diuretics.**

REFERENCES.— [1] "Revue Médico-Chirurg. des Maladies des Femmes," July, 1895; [2]" La France Médicale," March, 1895; [3]" Lancet."

PROSTATE (Diseases of). *E. Hurry Fenwick, F.R.C.S.*

Excision of Vas Deferens for Prostatic Hypert ophy—Parone[1] has made a series of experiments on dogs with regard to the effects of removing the testes, or the vas deferens alone. He finds that a bilateral excision of the vas deferens in dogs brings about the same atrophy of the prostate as castration. Drawings of the microscopic appearance of prostates after castration and excision of the vas deferens respectively show that practically the same changes occur after both operations. The author therefore recommends excision of the vas deferens for prostatic hypertrophy in preference to castration, as being the simpler operation, causing less mutilation and less mental shock to the patient, and giving equally good therapeutic results.

Obstruction of the Ejaculatory Ducts.—At a meeting of the American Association of Genito-urinary Surgeons, E. C. Burnett[2] of St. Louis, reported a case of early obstruction of the ejaculatory duct. The patient was an unmarried man, aged thirty-five, who at the age of five was operated on for stone in the bladder, left lateral lithotomy being performed.

The patient stated that his testicles almost always pained him for a day or so after sexual indulgence. Sexually he states that he was perfectly normal, excepting that he had never had an emission of semen. The external genitals were well developed. Upon the introduction of an endoscope into the urethra the prostatic portion of the canal was found to be extraordinarily short and the verumontanum was so small as to be barely distinguishable from the surrounding tissue. Palpation through the rectum for the seminal vesicles disclosed the fact that they were not appreciable to the touch and that the prostate was barely definable.

Obviously in the performance of the operation of lateral lithotomy, thirty years previously, the ejaculatory ducts were torn across, becoming permanently occluded, and through the occlusion of these ducts there followed arrest of development of the prostate gland and seminal vesicles.

Obstruction of the ejaculatory ducts is given as one of the causes of atrophy of the seminal vesicles, but Burnett could find no reference to any such influence upon the prostate.

Prostatectomy (Some considerations on).—Dr. George Woolsey[3] considers: (1,) The nature of the obstruction caused by prostatic hypertrophy; (2,) The choice of operation for its relief.

After considering the views expressed by various authors from Mc Gill's paper in 1889 up to the present time, he comes to the conclusion that it seems evident that the median lobe is not the only factor, or even as important a one in prostatic obstruction as is claimed by many.

He considers that intravesical growth alone of the median and lateral lobes is not accountable for all the trouble in prostatic obstruction which it is sought to remove by operation.

Obstruction by the median lobe is due almost entirely to intravesical growth; that brought about by the lateral lobes is due to lateral compression extravesically.

Intravesical prostatic outgrowths may be a frequent or even the most frequent cause of vesical obstruction, but it is no less true that they are by no means the only cause of such obstruction.

The force that is often required to squeeze the finger into the bladder, past the enlarged lateral lobes after perineal cystotomy, is clear evidence of the obstructive force they may exert.

To sum up, the following conclusions are justified: (1,) That intravesical prostatic growth is not always, though perhaps most often, the cause of obstruction requiring operative relief; (2,) That in such cases the median portion plays a most important part by forming a valve in the majority of cases; (3,) That the lateral lobes are often important factors, both intra- and extravesically, but especially in the latter manner.

Choice of Operation.—The choice of operation is made less free by the uncertainty of diagnosis, which is taken by many as an indication to do a suprapubic operation in all cases, for it admits of digital and ocular examination, and therefore accurate diagnosis with few exceptions.

McGill's claim that the suprapubic incision insures complete and most efficient drainage is untenable. Although it may drain the

bladder after a fashion, it will not keep the pocket made by the prostatectomy free of urine, which can not but affect it unfavourably.

Perineal drainage is the best way to avoid the difficulty for which Kümmel dilates the prostatic urethra and uses a large catheter drain, after suturing the bladder. If one is to rely on suprapubic drainage, the plan used by Cameron[4] seems to be the plan to recommend. On account of the stinking urine, the bladder, opened supra-pubes, was drained and treated for cystitis, and after six weeks prostatectomy was performed when the patient was in a better general and local condition. As Belfield[5] says, the addition of the boutonnière affords an access to the entire prostate, which may convert an utter failure into a complete success. By Belfield's method a "low level route" is sought for, and as the necessity for removing very large masses of the prostate is done away with, the mortality should thus be lowered. Besides the perineal opening and perineal drainage Belfield adds over-stretching of the prostatic urethra, thus tacitly acknowledging the importance of the compression of the lateral lobes.

Bang[6] has reported a case where its use was very effective, but the amelioration unfortunately proved temporary, indicating that the lateral lobes require something besides stretching. This something Harrison tries to supply by long-continued tube pressure; but this, too, is generally admitted to be insufficient, and some more radical treatment of the lateral lobes is required.

Woolsey doubts if it is feasible to treat or remove the lateral lobes sufficiently through a suprapubic opening in most cases. Furthermore, even if it be granted that the removal of the lateral lobes can be satisfactorily effected through the suprapubic incision alone, the prostatectomy of whatever part can only be done, as McGill himself says, by leaving a raw surface, unless it is possible to suture the wound, as Tuffier[7] has done in one case. Mischief would undoubtedly result from stagnant urine accumulating in this position, which it must do with suprapubic drainage, and also the risk of sepsis from exposure of a large absorbent surface is directly increased with the amount of prostatic overgrowth which is removed. Belfield's or Nichols's[8] combined operation, and Cameron's plan before mentioned appear to offer the best solution of the question.

All agree that there are conditions which contra-indicate the suprapubic and indicate the perineal route if any—namely, serious mischief elsewhere, and a small, rigid contracted bladder that can not be raised above the pubes. The perineal route is safer, 9 per cent. against 13·6 per cent., and it affords temporary relief in all suitable

cases and a radical cure in a fair number. The functional results of perineal operations, according to Belfield's figures, are about the same as those of suprapubic. With less danger, the best drainage, and fair results, the perineal route has a certain field of usefulness. Its indications are variously given by different authors, being generally limited to small growths restricted to the posterior median wall, and especially to cases where the bladder is atonic, contracted, or rigid, where there is renal trouble, toxæmia, or advanced cystitis, and, of course, where the perineal distance is not too great.

Lateral Prostatectomy.—In this operation diminution in size of the lateral lobes removes both their intravesical projection and their lateral compression. If a median outgrowth is present, this result on the lateral lobes and the resulting cicatricial contraction, and subsequent atrophy of the gland will prevent the median portion from acting like a valve by enlarging and lowering the vesical outlet. The median portion may even atrophy and disappear, and thus a "low level route" would in time, if not immediately, be obtained. Drainage, not equal to perineal, but at least as good as suprapubic, is obtained through the urethra. Thus fulfilling the requirements of the case, it has the following advantages: there is no raw surface left, the mucous membrane being uninjured; it is safe, simple and effective; it is done under inspection and not blindly, and there is less danger from hæmorrhage.

By one or other of these perineal operations all varieties of prostatic enlargement may be operated upon; but the operation most generally applicable and giving the best results, but the highest mortality, seems to be at the present time the combined operation recommended by Belfield. Where this is contra-indicated, and in other suitable cases one of the perineal methods may be preferred on account of their lower mortality.

Where lateral enlargement is the most prominent feature Woolsey recommends lateral prostatectomy as most conservative, safe and easy.

REFERENCE.—[1] "Il Policlinico," June 1, 1895; [2] "Philadelphia Med. News," June, 29, 1895; [3] "Journ. Cut. and Gen. Urin. Diseases," July and Aug., 1895; [4] "Brit. Med. Journ.," Oct. 19, 1889, p. 863; [5] "Amer. Journ. of Med. Scien.," Nov., 1890, p 439; [6] "Annals of Surgery," April, 1893; [7] "Bull. et Mém. de la Société de Chir. de Paris," 1892, xviii., p. 842; [8] "Lancet," 1894, vol. i., p. 926.

Synopsis.—(Vol. 1895, p. 430.) Rectal suppositories of **Potassium Iodide**, 10 grains each, every night said to assist enlargement in prostatic hypertrophy.

PROSTATE (Senile Enlargement of the).

E. Hurry Fenwick, F.R.C.S.

Cure of the Enlarged Prostate by Castration—(White's Operation).—Last year the attention of the profession was profoundly arrested by the suggestion of a new departure in the radical treatment of the enlarged prostate. Prof. White, of Philadelphia, submitted, that as the removal of the testes in the dog was followed by atrophy of the normal prostate, double castration might induce shrinkage of the pathologically enlarged human prostate, and that thus the misery and the danger of prostatic obstruction might be averted. (Compare "Medical Annual," 1895, p. 431.) Shortly after this suggestion was made public, Ramm, of Christiania, reported two cases of castration, carried out with the hope of causing atrophy of the enlarged prostate. In both cases improvement was noticed as the result of the operation. This year the interest of urinary surgery has mainly centred in this subject, and the opinions of leading surgeons have been expressed freely for and against the operation. As the subject is of importance, it has been decided to give a brief *résumé* of the literature.

It has long been recognized that the removal of the testicles in animals exercises a great influence upon the size of the prostate. Thus Hunter has shown that the prostate of the perfect bull is soft and bulky, while that of the castrated animal is small, flabby, tough, and ligamentous. Griffiths examined the generative organs of the pig, bullock, sheep, horse, cat and dog after castration, and found in each that the prostate had been transformed into a mass of fibrous connective tissue. White independently confirmed this work by experimental research on the dog. The same result has been noted in the human species after similar mutilation. Gruber has observed, says Griffiths, marked atrophy of the prostate in a man aged sixty-five, who had been castrated in early youth. Pelican says that the prostate in eunuchs is about the size of that found in children.

Civiale, in doing a lithotomy on a man who had undergone complete castration for the cure of double hernia, found the prostate had practically disappeared.

Hurry Fenwick showed a patient at the Medical Society a year after complete ablation of penis and testicles for epithelioma. The prostate was not recognizable, and the finger in the rectum impinged, when the bladder was empty, upon the back of the pubes. Probably, however, this extreme atrophy was due to the penis being removed as well as the testicles, for Fenwick has not met with so complete a disappearance in any case of mere double castration. Much additional corroboration of this point has accumulated.

The first step in the problem is then clearly made out—castration produces atrophic changes in the normal prostate. The second step is the effect of double castration upon *pathological* enlargements of the prostate.

The evidence of the influence of castration upon senile enlargement of the prostate may be collected under three heads :—

First, *Tactile*, as estimated by the finger.

Second, *Microscopical*, as gathered from post mortem specimens.

Third, *Clinical*, as deduced by the alleviation of the symptoms of obstruction and urinary distress.

I.—*Gross Changes in the Senile Prostate of the Castrated.*—Out of one hundred and eleven cases collated by White, rapid atrophy of the prostate took place in 63·7 per cent. In some patients the diminution in size, as estimated by rectal examination, was most rapid and most marked ; in others the reduction was slow. In all upon whom I have operated the reduction has been very gradual, and the prostate has never "disappeared." The prostatic lobes flatten, the interlobar groove or line of demarcation fills in, the bladder wall and the prostate blend, and their limiting boundaries become confused ; the finger can be passed more readily over the extreme limit of the prostatic enlargement ; the bulging into and the encroachment of the gland upon the rectum becomes less and less obvious, and the length to which the catheter has to be passed, before its eye reaches and taps the urine (the intraprostatic measurement), diminishes.

II.—*Microscopical Changes in the senile prostate after double Castration.*—Griffiths and White have both noted the changes in the microscopy of the organ. Griffiths examined the prostate of a man dying eighteen days after double castration. The changes he found were : (1,) Proliferation of the columnar cells lining the glandular tubules ; (2,) Acute fatty degeneration of the cells thus accumulated in the lumen of the tubules, with their disintegration and ultimate disappearance ; (3,) Contraction of the tubules after a conversion of their naturally tall and slender columnar cells into low cubical or almost flattened small cells ; (4,) In the stroma, proliferation of connective tissue and unstriped muscle-fibre cells (*Fig.* 38).

It appeared that in parts, many of the newly formed cells in the connective tissue had disappeared, or had been converted into fibrous stroma in which there were no muscle fibres or only traces of them. In those parts of the stroma where the changes had taken place quickly, the newly formed cells were swollen, and filled with fine granules of fat.

Griffiths continues thus : "If a comparison be made between the

structure of this enlarged prostate eighteen days after bilateral castration and that of an ordinary enlarged gland from a man whose testicles had not been removed, or not destroyed by disease, it will be seen that the glandular tubules and the intertubular connective tissue, with its unstriped muscle fibres, have undergone definite structural changes. In the tubules, the epithelial cells had undergone, first, proliferation, so as to form new cells; secondly, well marked fatty degeneration; and lastly, disintegration, followed by their complete

Fig. 38.—Section of enlarged prostate eighteen days after bilateral castration × 350.

a, Contracted tubule filled with small cells; *b*, Tubule filled with epithelial cells undergoing fatty degeneration; *c*, Stroma containing proliferating connective tissue cells; *d*, Unstriped muscle fibres.—*Griffiths.*

disappearance. In this manner the tubules had, in the majority of instances, become greatly reduced in size. In the intertubular connective tissue similar changes had taken place, namely, proliferation of the connective tissue cells, fatty degeneration of the new cells, their complete disintegration, and ultimate disappearance. In like manner the unstriped muscle-fibre cells had undergone proliferation, and the new cells thus formed were indistinguishable from the con-

nective tissue cells among which they lie. In short, the cell elements first proliferate, then degenerate, and ultimately disappear, leaving a comparatively small amount of fibrous connective tissue in their place."

Griffiths had already noted somewhat similar changes in the prostate of a dog after castration (*Fig.* 39).

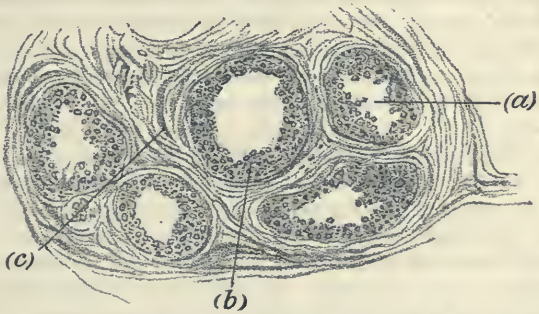


Fig. 39.—Section of prostate of full-grown dog twenty-one days after bilateral castration × 50.

a, *b*, Contracted tubules lined by low cubical or flattened epithelial cells; *c*, Stroma composed chiefly of fibrous connective tissue.—*Griffiths.*

White records the microscopy of a prostate which was removed from a patient dying on the evening of the second day after castration, and the report describes changes typical of commencing atrophy.

III.—*The Clinical Evidence of Changes taking place in the Enlarged Senile Prostate after Double Castration.*—The following case, which is recorded by White illustrates the changes in the clinical aspect of a prostatic case after castration. As this form of evidence is clear, comprehensive, and convincing, it is adduced here in preference to the more elaborate details of statistical records. It is of course an extremely successful case.

CASE 107.—The patient, aged sixty years, was admitted to the hospital on November, 16th, 1894. He was much broken down by long continued suffering, but was exceptionally intelligent for a hospital patient. He had begun to have symptoms of prostatic obstruction eighteen months previously. He had undergone various forms of internal treatment, in spite of which he was urinating hourly, and had used the catheter with increasing frequency for years. His distress had become so great that he had come for advice and for a rest in the hospital. He was examined by me, by several

assistants, and by two members of the class. His prostate was estimated to be the size of a small orange. The finger could not reach the upper border. The lateral enlargement was very marked, the borders of the gland nearly touching the ischiatic rami. It was moderately firm, and slightly elastic upon pressure. A soft catheter went in with a little difficulty. Urine began to flow when the eye was about ten inches from the meatus. The amount of residual urine averaged six ounces. He was using a catheter from four to eight times daily, and urinating, or attempting to urinate, from twelve to twenty-five times, occasionally oftener, in the twenty-four hours. The urine contained blood and pus, but no casts. It was stinking, and loaded with mucus. Castration was advised, but refused. He was admitted to the ward, the bladder was irrigated daily, and the urine sterilized as far as possible by the administration of salol and boric acid. Recumbency, with the pelvis slightly elevated, was maintained. The diet was carefully regulated, milk being given chiefly. He got some relief from these measures, but there was no change in the residual urine. He was taught the proper use of the catheter, and instructed how to keep it sterile, and was discharged from the hospital. On December 5th he returned, and said he was so much worse that he was ready for operation. This was performed on December 12th. Ether was used. The time of the operation, including stitches, was three minutes. Improvement in urination became manifest in the first twenty-four hours after operation. In a week the patient emptied the bladder easily and painlessly. The urine had become clear, and the frequency of urination had decreased to five or six times daily. The residual urine had diminished to half a fluid ounce, and on December 26th, but one fluid drachm remained after urination. He was examined five days after the operation, and the prostate was found to be merely a flattened fibrous mass, the upper border easily reached, the lateral borders shading off insensibly, so that its limits in those directions were difficult to determine. The bulging into the rectum, previously so unmistakable, had disappeared. A catheter inserted eight and a quarter inches drew a few drops of urine. The patient described to the class the change in the character of his urination, and said "that he then felt as he did when he was a boy in the fields."

He remained as a helper in the surgical wards for four months. During this time he had on three occasions a little increased frequency of urination, each time associated with digestive disturbances. He left the hospital apparently entirely cured. Mr. R. H. Fritz, of Boston, examined the prostate per rectum a short time before the patient's

discharge, and stated that "it was so soft and so small that its outlines were indeterminate. The prostate and the wall of the bladder felt very much alike."

By this, and by many other cases, it is proved that the clinical symptoms of prostatic obstruction may disappear after castration.

There are three questions to which the practitioner and patient will require as explicit answers as possible :—

(1,) Can bilateral castration be relied upon to cure the symptoms of every case of enlarged prostate?

(2,) What is the mortality and remote effects of bilateral castration?

(3,) Can the shrinkage in the prostate be brought about by any measure short of removing the entire testes, *e.g.*, by section of the vas or cord?

I.—The cardinal symptom is the urinary obstruction, and our patient immediately demands if castration will relieve him of the necessity of passing his catheter.

I am sure that much needless disappointment, discredit, and even disaster, may be avoided when answering this question by taking a common sense view of the mechanics of the bladder. There are two elements in the necessity for the catheter—the prostatic obstruction, and the muscular paresis. Let us take the latter first. Is it reasonable to expect a vesical muscle which has *for long* been crippled by severe cystitis, or for a vesical muscle which has *for long* been rendered inactive by the habitual use of the catheter, to recover itself and to resume work directly the prostatic obstruction is lessened by castration? It is not. It is equally, then, absurd to look upon castration as a panacea for all forms of prostatic obstruction and for all grades in the severity of the disease. I am sure that if a man has been absolutely dependent on his catheter for over three years, if he has had *no voluntary micturition* for that period, his chances of radical cure are not so good as he who has been only partially dependent on his catheter, and that for every year of complete catheter life, the prospect of cure diminishes. This is, virtually, the view which is held by Sir Henry Thompson on prostatectomy, only I consider the limit he assigns—two years—to the recuperative power of the bladder after habitual catheterism as too short a period. I have removed by prostatectomy, obstructing median lobes from patients who have been entirely dependent on their catheter for over two years with a perfect result, the catheter being entirely dispensed with. If the literature is consulted, it will be found that only five cases

(Horwitz (2), Ransom, Stimson and Thomas) are reported as having been entirely dependent on their catheter, and yet as having dispensed with that instrument on castration. Even supposing that castration has atrophied the obstructing part of the prostate, the catheter will still have to be used if hopeless paresis of the detrusor muscles, or if fibrotic change in the sphincter muscle has supervened. If the patient still retains power of expelling urine himself, there is a reasonable hope that a considerable part of the muscular power will return, provided that the obstruction be removed.

Will the obstructing portion of the prostate atrophy in every case after castration? Our knowledge on this point is as yet imperfect.

Griffiths pointed out in 1890 ("Journal of Anatomy and Physiology": (1,) That enlargement or hypertrophy of the prostate gland results from a growth of the gland tubules with their associated muscle, so as to form new gland substance closely resembling that of the normal gland. This constitutes the *first* or *glandular* stage. (2,) After a variable time degenerative changes set in, which ultimately convert the new tissue into a mass of more or less dense fibrous connective tissue, containing only the atrophied remains of the glandular and muscular elements. This constitutes the *second* or *fibrous* stage.

When this second or fibrous stage has been reached throughout the gland, as occasionally happens, castration would not, in Griffiths' opinion, cause any very marked diminution in size of the enlarged prostate, and therefore it must not be supposed that dwindling of the enlarged gland will invariably result after castration, though this may be the usual result.

These observations, confirmed as they seem to be by clinical experience, point to the importance of *early* operation in selected cases.

White, of Philadelphia, quotes Greig Smith on oöphorectomy for myomata as saying: "As to the results, we may, in every thirteen cases of recovery after operation, reckon upon complete cure; *i.e.*, shrinking of the tumour and menopause in ten cases, improvement in two, and failure in only one." White adds: "An examination of the table of castration shows that with that as a basis we may in every thirteen cases of recovery count upon eleven being complete cures in the sense of shrinking of the tumour, one being improved, and one being unsuccessful."

The conclusions which I have formed upon the results of this operation cause me to estimate the success at a much lower figure.

Other Effects of Castration.—There are other and subsidiary effects of castration on the symptoms of enlarged prostate, which should not

be lost sight of in the consideration of the all-absorbing question concerning the catheter. These are: (1,) The diminution of the cystitis and cystopyelitis; (2;) The alleviation of the pain of the inflamed prostate.

1.—It is a remarkable fact that the pus in the urine invariably diminishes after castration. This result is partly due to the effect of the wound on each side of the pubes acting as a sort of strong counter-irritant (comp. Hurry Fenwick, "Medical Society Trans.," 1895), but this cannot be all, for even mild pyelitis improves. Should the amount of pus present before the operation be small, there is every likelihood of its being reduced to a minimum in successful cases, for but little residual urine is left by the renovated muscle, and œdema and congestion of the base subsides. Moreover, a healthier flow of blood to the now active muscle brings with it a healthier tone to the mucous membrane. Old cases of chronic cystitis frequently ameliorate, but do not entirely cure. This is especially the case where the catheter is still a necessity after the operation. The presence of the inflamed prostate and congested base is a standing menace to the integrity of the kidneys, for at any minute an ascending septic invasion of these organs may take place. Castration by shrinking the prostate certainly reduces this danger to the least possible.

2.—*Will the pain of the inflamed enlarged prostate subside?*—Before this important question can be answered, a great deal of material must be collected. It is apparently easy in favourable cases to relieve the muscular pain or cramp due to straining, and also that pain which is the result of cystitis, but as to whether definite prostatic pain, the result of chronic prostatitis, which in some rare cases precedes the difficulties of micturition, can be relieved, is at present uncertain.

Thayer Waterville made a personal communication to White of the following case: A man, aged seventy-four, who for eight years had had symptoms, suffered considerable pain in the perineum and glans penis, causing him to grasp the latter tightly a great part of the time. He had strong erections, and a decided sexual desire, which he had not gratified. For three months he had taken from a $\frac{1}{4}$ to $\frac{1}{2}$ a grain of morphine daily. The prostate was markedly hypertrophied, very tender and dense, the median lobe most enlarged; the catheter, which was introduced with pain every four hours, had to traverse nine-and-a-half inches before drawing the urine. For three years the patient had not passed any urine except by catheter. Cystitis was present. The capacity of the bladder was six ounces.

On the seventh day after castration improvement set in. The pain

had somewhat decreased. The pain in the glans was greatly lessened. Catheter drained urine at nine inches. Prostate was softer and less tender. The morphine was withdrawn, which caused some depression, and an exhausting diarrhœa. Twelve days after the operation patient expressed himself as feeling decidedly better. The attacks of pain were much less frequent, and the irritation of the penis was decidedly lessened, and he scarcely touched it. The prostate had markedly decreased in size, and there was scarcely any tenderness. Unfortunately the record of the case ends at this point.

I castrated one man, aged forty-six, as a severe test case for this condition. He applied to me after ten years of skilled treatment for aggravated chronic prostato-vesiculitis. Great local pain, extreme perineal tenderness and severe and intractable neuralgic radiations had been suffered from. The man was hopeless, thin, and care-worn. Connection was insufferable, and sitting or walking was almost unbearable. I placed the chances before him as best I could, and obtained a promise that he would not expect relief until six months after castration. He readily submitted to the operation. Month by month I despaired of any improvement. About the fifth he began to mend; at about the seventh expressed himself as satisfied at the relief he had obtained. He is now plump, all the radiating pains have ceased, frequency of micturition has disappeared, but he still has slight bouts of pain in the perineum and sitting on a cushion is still unpleasant. His sexual function is not in abeyance, for he notices semi-erections and occasional watery emissions. The prostate is smaller and flatter, but is still plainly felt and easily outlined.

II.—The second question of importance has reference to the mortality and remote effects of castration.

The mortality.—18 per cent. of the cases have been fatal, but there is every reason to believe that unsuitable and unfavourable cases have been chosen in the first wild rush which is so unreasonably made at every innovation. Uræmic and even dying patients have been castrated. Thirteen out of the eighteen may, says White, be fairly excluded, and this would leave a mortality of 7·1 per cent. Double castration in patients with fair renal power and bodily "vis" ought to be an operation of small mortality.

The Remote Results.—"The remote results of the operation cannot yet be determined. The cases of death with precedent mental symptoms recorded and described as 'mania,' 'acute mania,' 'childishness,' etc., are only such as every surgeon is familiar with in a certain proportion of cases of operation on aged persons whose mental equilibrium is easily disturbed, and can have no bearing on the

question of later mental changes as a result of the castration. With greater accuracy we would probably classify the large majority of them as 'uræmia,' and some of the remainder as 'traumatic delirium.' It is worthy of note that no mental or physical changes whatever, except favourable ones, have been noted in a single one of all the successful cases, some of them now dating back for nearly a year and a half. All the information we have on this subject, and it is far from scanty, leads to the belief that the removal of the testicles from persons who have reached full adult life, and *a fortiori* from aged persons, has no effect whatever on the mental functions, or on the general physical characteristics."

III.—Can these shrinkage changes be brought about by unilateral castration, or by mere section of the vas deferens?

The evidence as to the value of unilateral castration in causing shrinkage of the *entire* prostate is contradictory. In two cases it has resulted in very marked improvement in the symptoms. Section of both vasa may be sufficient, the effect of merely dividing the vas is as yet not thoroughly worked out.

Summary of the Effects of Castration.

In one hundred and eleven cases collected by White, of Philadelphia there was noticed :—

(*a*,) Return of expulsive power in 66 per cent. of the cases.

(*b*,) Reduction or disappearance of cystitis in 52 per cent.

(*c*,) Reduction in the size of the prostate, as estimated per rectum, and by the depth to which the catheter has to penetrate before it draws water, in 87·2 per cent.

(*d*,) Improvement in rectal expulsion.

(*e*,) Reduction of pain.

(*f*,) A return to local conditions not far removed from normal (46·4 per cent.).

(*g*,) Certain dangers, such as melancholia, mania, have been noticed apparently as a result of the operation rather than of the disease. More evidence is, however, needed to establish a distinct connection.

Remarks.

I have given the results obtained from all sources in the preceding pages before venturing to criticise the operation of castration on the limited knowledge derived from over a dozen cases, backed though this is by a fairly large experience of all forms of therapeutic treatment and operative attack upon the enlarged senile prostate. I believe that the operation of bilateral castration, which we owe to Dr. White,

of Philadelphia, is a valuable and important addition to our methods of treating the distressing sequelæ of enlarged prostate, for in a certain proportion of cases it undoubtedly will cause shrinkage of this gland and relief of the symptoms induced by its obstruction. Those patients who have large, softish, or elastic prostates, partial voluntary micturition, fair renal power (urea 1·5 to 2 per cent., no casts, no albumen or sugar, specific gravity 1015 to 1020), and average physical "vis," are favourable subjects for radical cure by castration, provided that the symptoms of urinary obstruction which demand catheterism have not extended over more than two or, at the most, three years. Such, *if an attempt at radical cure is demanded, or is considered necessary*, may be reasonably advised to choose castration rather than suprapubic prostatectomy.

I believe, however, that perineal prostatotomy and suprapubic prostatectomy will not be superseded by castration, but that the clearer judgment, unglamoured opinion, and wider experience of the next decade, will assign to each of these operative measures their distinctive indications and value.

REFERENCES.—White, "Annals of Surgery," vol. xvii., p. 970, also vol. xviii., p. 152; Ibid., pt. 31, July, 1895; "Brit. Med. Journ.," p. 1,353, pt. 1, 1894; Griffiths, "Journ. Anat. and Physiology," Oct., 1879; "Lancet," March 30, 1895; "Brit. Med. Journ.," March 16, 1895; Ramm, "Centralb. für de Chirurg.," No. 35, Sept. 2, 1893; Ibid., No. 17, April 28, 1894; Moullins, "Brit. Med. Journ.," May 4, 1895; "Med. Press and Circular," Sept. 19, 1894; Hurry Fenwick, "Brit. Med. Journ.," March 9, 1895; Ibid., March 16, 1895; Faulds, "Brit. Med. Journ.," May 4, 1895; Haynes, "Pacif. Med. Jour.," Oct., 1894; Warren, "Bost. Med. and Surg. Report.," April, 1895.

PRURIGO.

Synopsis.—(Vol. 1895, p. 434.) Effleurage relieves itching; also 5 to 10% ointment of **Sulpho-phenate of Sodium**. Increase of **Fat** in the diet; administration of **Cod-liver Oil**; **Warm Baths**, followed by application of **Carbolic Acid**, 50%, and **Acetic Acid**, 10%.

PRURITUS.

P. G. Unna, M.D., Hamburg.
Norman Walker, M.D., Edinburgh.

This formed the subject of one of the discussions at the meeting of the Brit. Med. Assoc., in London. The discussion was introduced by McCall Anderson and Brooke. In regard to treatment, Anderson laid weight on eliminating all other disorders, such as urticaria, pityriasis and scabies, in which the itching is only a symptom. Then the patient should be carefully examined, and any derangement which may exist corrected. He referred to the use of **Tr. Cannabis Indica** and **Gelsemium**, and **Carbolic Acid** internally, but his own preference

was for **Electricity, Atropia** subcutaneously, or the coal tar derivatives such as **Antipyrin** and **Phenacetin.** If there is any suspicion of nervous or nutritive debility, tonics such as **Arsenic, Phosphorus** or **Strychnia** should be given, the first and last by subcutaneous injection.

Brooke divided the cases into two classes, according as the action was from within or without, and these again into smaller groups. He referred to purely nervous pruritus, a grave form which includes cases in which the itching exists solely in the imagination of the patient, and which is really a form of monomania, and the reflex itching from some mechanical or chemical irritant in some other organ (among which by the way he put oatmeal). In this class Brooke would include the cases caused by heat and cold. Hæmatic pruritus was a very distinct class, an illustration of which was supplied by jaundice, diabetes, etc.

The external group comprised three classes: (1,) Local skin diseases; (2,) Epizoic parasites; (3,) Irritants of a physical or chemical nature. Pressure was also of importance, and change of posture was a well known provocative of itching. The pruritus caused by certain drugs was often very severe, as was that due to plant poisons, which was sometimes the cause of an apparently unexplained pruritus. The action of rough under-clothing was often the starting point of intolerable pruritus. Myrtle strongly advocated local applications, especially **Tar** combined with **Chloral.** Waldo recommended the application of counter-irritation over the vaso-motor regions of the affected parts. Internally he had often used **Salicylate of Soda** with advantage. Stopford Taylor had no faith in constitutional remedies. In many cases of pruritus, the disease could be got rid of by simply avoiding the cold bath.

Mrs. Garrett Anderson referred to a form of neurotic pruritus which occurred in women and in men who led "effeminate" lives, ate too daintily, and took too little exercise. Rest and plenty of good wholesome food were the best means of getting rid of the pruritus.

Bronson[1] remarks that sedatives are generally disappointing, and narcotics especially objectionable. Bromides and sulphonal are the least harmful. **Cannabis Indica** and **Gelsemium** are sometimes of use. He strongly commends the following, antipruritic oil: ℞ Carbolic acid ʒj, Liquor Potassæ ʒj, Oleilini ℥j. Shake well. Thymol he says is often irritating to sensitive skins. Hyde has long given up cocaine, as it is extremely likely to develop the habit. He has two methods: (1,) The exclusion of air. (To this many pastes owe their reputation); (2,) When the pruritus is limited to one side treat the other side with stimulants. He regards gout as the most frequent cause of pruritus,

and diabetes as the next. Corlett uses **Ichthyol** in pruritus hiemalis; locally, **Resorcin** has given him better results than any other drug. Morrow condemns the use of gelsemium and applies the **Hot Water Bag** to the spine. Locally he uses an ointment of **Carbolic Acid** and **Camphor.** Hardaway mentions three drugs which may often be given with success: **Quinine** in 10 to 15 gr. doses at night; **Vin. Antimon.** during the day; and **Pilocarpine** internally, or hypodermically where the skin is harsh and dry. He puts **Carbolic Acid** at the head of all local applications. Denslow advises **Ergot.**

Pruritus Ani.--Dr. Berger treats this by introducing into the anus a tampon of cotton wool about an inch long, soaked in a solution of **Hydrochlorate of Lime** 2 per cent. As soon as a smarting is felt, the tampon is removed, and the perineum, scrotum and adjacent parts washed with the same solution, which is allowed to dry on. This is said rapidly to cure both the itching, and the eczema which is usually present.

Arnstein[2] has got great benefit from the administration of **Antipyrin.**

REFERENCES.—[1] "Journ. Cut. and Genito-Urinary Diseases," No. 135; [2] "Gaz. Lekarska," No. 48, 1894.

PRURITUS ANI. *Herbert William Allingham, F.R.C.S., Eng.*

This complaint is most distressing to bear, the itching sometimes rendering life almost unendurable.

Among its *general causes* are various constitutional disorders, hereditary predispositions, as with strumous persons, and debility. One of the most frequent causes is gout, whether active or latent. Too free indulgence in the pleasures of the table, the consumption of particular articles of diet, insufficient exercise, excessive smoking--all these may induce the complaint. Sometimes, however, it may occur even in the abstemious, and may be set up, or at least aggravated, by worry or overwork.

There are many *local causes*, such as eczema, sometimes brought on by constipation, the irritation and secretions of piles, polypus, fistula, fissure, chronic diarrhœa, vaginal discharges, thread worms and other parasites, and so forth.

The itching which constitutes the complaint is usually worse at night when the patient is warm in bed, and the almost inevitable scratching makes matters worse. But excitable people may be affected in the day-time, especially after exercise, or on entering a warm room.

It is generally said that there is little change in the part affected except roughened, thickened and more rugous state of the skin. But as a matter of fact we may observe an eczematous or hepatic rash;

or a rugous condition, with bright redness caused by scratching, scales forming irregular rings, cracks starting up from the anus, and the characteristic aspect, the loss of the natural pigment of the part.

TREATMENT.—General treatment is usually more successful than mere local treatment. For strumous and debilitated patients tonics are useful, *e.g.*, **Cod-liver Oil, Iron** and **Quinine,** etc.

For latent or active gout strict dieting is essential; and this is especially necessary for patients who eat or drink too freely. They should walk several miles daily, and if the bowels are confined various purgatives will be beneficial. Mineral waters, such as Carlsbad, Friedrichshall, etc., are often useful.

When the essence of the complaint is nervous, as it is in excitable patients, **Arsenic** and **Quinine** may be given freely, and **Bromides** are frequently efficacious.

When pruritus arises from the local causes indicated above, either alone or in combination with constitutional derangements, these should be treated according to their nature by various ointments, lotions, powders, or caustics.

In bad cases when patients are worn out through inability to sleep, the nocturnal irritation may be prevented by the insertion into the anus of a bone-plug, fitted with a circular shield. Free removal of the thickened and diseased skin is often necessary to procure a lasting cure.

It is obvious that when piles, polypi, or fissure are the causes of pruritus, their removal is indispensable for the cure of the malady.

PRURITUS VULVÆ. *Theophilus Parvin, M.D., Philadelphia.*

The following mixture is recommended for this affection by Spiegler :—

℞ Sulfophenate of Soda parts 5—10 | Lanoline, Vaseline, āā parts 45

PSEUDOCYESIS. (See "Nervous Disorders of Women.")

PSORIASIS. *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

Dr. P. Bock's[1] methods of preventing recurrence of psoriasis are as follows : Attention to general health ; avoidance of excessive cold and heat ; woollen under-clothing, and woollen bed-clothes. The patient must take two hot baths weekly, and rub the whole body with 5 per cent. **Salicylic Ointment,** which is to be left on for a night. Recently Bock has used **Salicylic Soap,** allowing the froth to dry on. When there are recurrences, he paints the spots with a solution of **Chrysarobin** and **Chloroform.** Internally, he thinks **Cod-liver Oil** useful.

Carrier[2] reports a case of psoriasis of many years' duration, which

had been treated with **Arsenic** for at least two and a half years. The patient got a deep chocolate colour, like a Mulatto, and warts developed on the palms and soles, which had to be pared every two or three days.

Mr. Hutchinson has met with cases where multiple epitheliomata developed after the prolonged use of arsenic, and Mr. Chiene has recently had a similar case.

Dyer[3] discusses the use and abuse of arsenic. It is useful in many cases of psoriasis, chronic eczema, pemphigus, dermatitis herpetiformis and other bullous diseases. It is injurious in acute inflammatory conditions, in pruritus, herpes zoster, erythema, urticaria, etc. The number of skin diseases which may be produced by it is considerable. He remarks that arsenic should rather be the last than the first remedy to which we should turn.

Bouffe[4] has used **Brown-Sequard's Fluid**, with good result.

Gottheil[5] reports good results from a combination of **Ichthyol** and **Arsenic** internally, but as he applied also **Oil of Cade, Anthrarobin** and **Chrysarobin**, not much stress can be laid on his observations.

Feliciana[6] combines the **Chrysarobin** with **Acetic Acid** and **Tar.**

Scifert[7] gives his experience of **Iodide of Potash**, which is, that, while it is useful in some cases and will completely remove the disease without any other treatment, it can by no means be depended on to do this. The general health must be good and the urine free from albumen.

Coffin[8] uses in mild cases **Glycerolate of Starch** and **Oil of Juniper** āā ʒiiiss, **Green Soap** gr. 75, and **Salicylic Acid** gr. 45. The affected parts are washed with warm water and tar soap every three or four days. When the psoriasis is diffuse, prolonged baths and mild ointments are necessary. The patient's diet should be regulated, and alcohol, tea and coffee avoided. Arsenic is only given when the disease has ceased to advance.

REFERENCES.—[1] "La Clinique," Dec., 1893; [2] "Med. News," Feb., 1894; [3] Ibid., Sept., 1894; [4] "Press. Med. Belge.," 1894, No. 35; [5] "Atlanta Med. and Surg. Journ."; [6] "Rif. Med.," 1894, No. 267; [7] "Arch. f. Dermat. u. Syph.," xxvii, part 3; [8] "Lo Sperimentale."

PSORIASIS (Lingual). (See "Leukoplakia.")

PUERPERAL FEVER. *Theophilus Parvin, M.D., Philadelphia.*

Ross recommends, so soon as symptoms of the disease occur, bringing the hips to the edge of the bed, introducing a bivalve speculum, and with borated cotton thoroughly cleanse the uterine cavity until the cotton comes away odourless and clean. Then, with a piece of cotton which has been dipped in **Iodized Phenol**, daub over

the entire endometrium. He claims that in a few hours the change is surprising, and the rapidity with which involution takes place is marvellous. The value of a **Cold Bath** in the treatment of puerperal septicæmia is confirmed by Macé in his report of seventy-four cases. The general rules to be observed in its administration are, first of all, the uterus must be known to be free from products of conception. The bath must be used whenever the temperature reaches 101° F., and even below this point if the patient be suffering from headache and hot skin. The temperature of the bath should be a little over 150° F. Macé insists upon the patient remaining in till she shivers.

Subcutaneous injections of **Caffeine** or **Sparteine** should be given before the bath, when the symptoms are severe, so as to counteract the tendency to syncope.

Humerik reports two hundred and fifty two cases of puerperal sepsis in the Amsterdam Obstetric Clinic, treated by prolonged irrigation with 1 and 1½ per cent. or 2 per cent. **Carbolic Acid Solution,** or 1 in 4,000 **Bichloride of Mercury Solution,** following the irrigation by a thorough painting of the endometrium with undiluted **Tincture of Iodine.** All of the cases recovered.

Kesmarky[1] reports two cases of puerperal infection successfully treated by the intra-venous injection of a solution of **Corrosive Sublimate.** The quantity of sublimate first used was 1 milligramme, and it was progressively increased to 5 milligrammes a day ; one patient had 37 miligrammes in ten injections, and the other 31 in eight.

Serum Treatment of Puerperal Infection.—A recent number of the "Journal d'Accouchements," discusses this subject, referring to experiments upon animals, and giving two cases of grave puerperal infection successfully treated by the injection of **Antistreptococcus Serum.**

Pinard[2] warmly advocates continuous uterine irrigation in those cases of infection not relieved by one or two uterine injections.

Continuous irrigation was tried by Winckel soon after it was first recommended, by Schücking, in 1877, but he soon abandoned it, and it is very doubtful whether the method will come into common use. Recent works upon obstetrics either do not mention it, or fail to express approval.

REFERENCES.—[1] "Centralblatt. f. Gynäkol.," Sep., 1894 ; [2] "La Semaine Médical," Aug. 21, 1895.

PUERPERAL FEVER (Prevention of).

Synopsis.—(Vol. 1895, p. 265.) Smyly prefers external to internal examination to ascertain presentation, considers it easier for diagnosis, and important as guarding against infection; prolapse of funis, of course, is an exceptional condition for the above method. Expression of placenta should be avoided, also prophylactic douching before and after delivery.

PURPURA HÆMORRHAGICA.

Synopsis.—(Vol. 1895, p. 15.) Liq. Calcii Chloridi, 30-minim doses every two hours for bleeding of gums, etc.

RECTAL ETHERISATION. (See "Anæsthetics," p. 13.)

RECTUM (Examination of). *Priestley Leech, M.D., F.R.C.S.*

Howard Kelly[1] has practised the following method of examination of the rectum with successful results for the last two years: (1,) Thorough evacuation of the bowels by purgative before and enema afterwards; (2,) Knee breast posture; (3,) Introduction of a cylindrical speculum provided with an obturator; (4,) Withdrawal of the obturator followed by distension of the bowel with air; (5,) Inspection of the dilated bowel by light reflected from a head mirror through specula of various lengths and diameters. Anæsthesia as a rule is not required.

The bowel is illuminated by an electric light (but daylight will do), held close to the sacrum, and the examiner wearing a head mirror directs the rays through the tube into the bowel. The slightest peculiarities in shape or colour of the mucosa of the bowel, or the slightest elevation of surface or secretion sticking to it, can be seen. Figures of several of the specula are given.

REFERENCE.—[1] "Annals of Surgery," April, 1895.

RECTUM (Vaginal Excision of). *Priestley Leech, M.D., F.R.C.S.*

The sacral route for removal of rectal cancers has lately been extensively practised on the Continent and in America. Another method of excision in women has been proposed by Rehn of Frankfort[1]. The operation is easier than that by the sacrum, and the loss of blood is much less. The technique is as follows. The rectum is first securely tamponaded and the vagina thoroughly disinfected. The wall of the vagina is then put on the stretch by long but not too broad hooks, and carefully split, as well as the rectum, as far as the external sphincter ani. If the cancer has not led to adhesions the anterior rectal wall is easily separated, and circular separation of the rectum is much easier than by the sacral method. After division of the bowel the central end is raised towards the symphysis by an assistant, so that the operator has the whole circumference of the bowel in sight; and any tissue or vessels holding it down posteriorly can be easily seen, seized with forceps, and then divided. In this way the freeing of the growth can be accomplished very easily and without notable loss of blood. The rectum must of course be previously filled with sterile or iodoform gauze, to prevent the escape of any fæcal matter. If the peritoneum is not opened the growth is cut away, the bowel

drawn down and sutured. If, however, the peritoneum must be opened this is easily done at the anterior rectal wall; the glands in the meso-rectum can be removed and the sigmoid flexure drawn down. One must take care that the mesentery of the sigmoid be not separated from the bowel wall but from the promontory, as the nutrition of the bowels depends on the vessels in the mesentery. The peritoneum can easily be sutured, and care must be taken that the vessels are not injured whilst doing this. Drainage is best provided for by two tubes placed on either side of the rectal wall and brought to the external surface through the ischio-rectal fossa. The patient is best placed almost in the sitting position. Rehn has tried it in one case, a woman, aged eighty-one; but she died of peritonitis on the third day.

M. Campenom[2] also suggests the vagina for excision of non-cancerous strictures of the rectum. In one case it gave excellent results, and the sphincter retained its function. The recto-vaginal septum is split up length-ways on the finger and the sphincter divided. Two flaps are thus formed which can be widely separated. The bowel is divided below the inferior edge of the stricture, and the rectum separated above the upper limit of the stricture; the diseased part is excised, the upper part of the bowel drawn down and sutured to the lower portion, and the wound including the sphincter carefully and exactly sewn.

REFERENCES.—[1] "Centralblatt. für Chirurgie," No. 10, 1895; [2] "France Méd.," No. 45, 1894.

REMITTENT FEVER. (See "Fever, Indian Remittent.")

RETINA (Detachment of). (See "Eye, Diseases of.")

RETINITIS (Albuminuric). (See "Eye, Diseases of.")

RHEUMATISM.

Synopsis.—(Vol. 1895, pp. 8, 9, 19 and 35.) **Asaprol**, a substitute for sodium salicylate, 4 to 6 grammes in cachets or solution, useful in acute forms, both articular and muscular. **Asclepias Tuberosa Liq. Ext.**, 5-drop doses (doubtful whether a rheumatic or neuralgic remedy). **Croton Oil** in small doses is advised by Sewall for chronic rheumatism. **Malacine** said to be a useful analgesic.

RHINOPHYMA. *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

Ohmann Du Mesnil reports a case where the nose weighed two pounds. The mass was simply removed with a knife. Rapid healing resulted.

RHINOSCLEROMA. *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

Pawlowsky[1] has investigated the effect of **Rhinosclerin**. After each injection there was considerable fever, along with a local reaction, and after two years of treatment, the growth of the nodules was arrested, and they became softer. They were then excised, and healed with a firm scar.

REFERENCE.—[1] "Deutsch. med. Woch.," 1894, No. 13.

Synopsis.—(Vol. 1895, p. 443.) Surgical treatment is best, but if too extensive, parasiticides, such as **Sublimate**, **Phenic Acid** or **Thymic Acid**, should be used after **Partial Ablation**. Stoukowenkoff successfully used **Injections of Fowler's Solution**.

RICKETS. *Henry Dwight Chapin, M.D., New York.*

Dr. Chaumier[1] reaches the following conclusions regarding rickets: (1,) Rickets is a specific disease, produced by an unknown microbe; (2,) It is contagious, endemic in towns, sometimes epidemic; (3,) It occurs spontaneously and in epidemic form in young hogs. Histological examination of the bone proves the identity of the disease in the hog and in children; (4,) The germs of the disease seem to be preserved in the houses. It is very probably this preservation of the germs that explains "hereditary" cases.

However, heredity in the sense that it exists in other infectious maladies may perfectly well be admitted.

REFERENCE.—[1] "Ann. d'Orthop.," vii., 303.

RINGWORM. *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

Dubreuilh has treated several cases of onychomycosis by Pelizzari's pyrogallic acid method. The affected nail is wrapped up in equal parts of **Pyrogallic Acid** and **Olive Oil**; considerable irritation is set up, and when the nail becomes loose, the pyrogallic treatment must be stopped. The nail then falls off, and the new one is presumably free from the disease.

At an epidemic in the hospital at Berck sur Mer, the treatment was the following: The head was shaved and washed with 1 in 1000 **Sublimate Solution**, the affected parts scraped with a sharp spoon, to remove all diseased hairs and epidermis, then washed with an alcoholic lotion of **Biniodide** and **Perchloride**. The patches were then covered with plaster of perchloride and biniodide. The method is said to have been followed by good results.

Pottevin[1] has used **Formol** in a 2 per cent. solution, applied on cotton wool and covered with a rubber cap. The method has not

been conspicuously successful, and a trial which we made with the remedy did not lead to any results.

Martin,[2] whose conclusions are evidently inspired by Sabouraud, says that the best results have been obtained by the alternate application of **Tincture of Iodine** and a pomade of **Carbonate of Potash.** This pomade facilitates epilation. If a few isolated diseased hairs remain, one is justified in destroying them with the needle or electric cautery.

Colcott Fox believes in **Epilation**, but only when it can be carried out *i.e.*, before the hairs have disintegrated, when they have recovered to a certain extent their consistence, or where they are so loosened by inflammation as to be very easily removed. The purely parasiticidal method is very slow. Shaving is very useful but must be carried out under strict antiseptic precautions. The *choice of an intelligent person to superintend the treatment, and the personal attention of the doctor* are of more importance than the choice of any particular remedy. **Croton Oil** in skilled hands is often a most valuable remedy. These few remarks of Dr. Colcott Fox admirably sum up the whole gist of the matter. We would especially endorse the statement that intelligence and preseverance are of much more importance than a whole chemist's shop-full of antiseptics.

Dr. Abraham's method of applying antiseptics by his vacuum apparatus (made by Maw) is on the right principle. (See also "Favus.")

REFERENCES.—[1] "Ann. de Derm. et de Syph.," July, 1894; [2] "These de Paris," 1894.

Synopsis.—(Vol. 1895, p. 477.) **Chrysarobin Ointments** covered with collodion flexile or antiseptic plaster, as used by Du Castel. Abraham practises **Epilation**, shaving the scalp, and after washing with soap and water, then alcohol, and finally with ether to remove all fatty matter. He applies pure **Creasote** by means of a special apparatus designed to introduce fluids into the skin under pressure, employing in the intervals, **Parasiticides**, *e.g.*, Carbolic Acid with Salicylic Acid in Lanoline Ointment or Vaseline. Noir uses hot **Antiseptic Solutions**, *e.g.*, of Corrosive Sublimate, after cutting the hair close and scrubbing the scalp with soap and water, the solution being applied on gauze compresses.

RODENT ULCER. *Norman Walker, M.D., Ed.*

The drawing *(Plate XV)* is an excellent representation of the stage of the disease where the diagnosis appears to be attended with most difficulty. It will be noted that the "ulcer" is by no means a prominent feature, and the condition at this stage is very often confounded with lupus. Unna, in his recent work, goes so far as to state that in Germany it is usually so confounded. Towards the inner and

upper angle the characteristic edge of the disease is seen, and it is very evident that we are dealing, not with an ulcer, but with a *growth* in the skin, the nature of which, as cancerous, is now recognized beyond dispute. The only points which are still in dispute, are wherein it differs from other varieties of cancer, but this matter is of little practical import. What is important, is to recognize the disease at an early stage, to recognize it as cancer, and to cut it out with the knife as soon as possible. The incision need not be very wide of the disease, but it must go through the whole thickness of the skin.

The patient and the doctor are often very anxious to know whether the disease is likely to recur after operation. My experience is, that if properly removed, the prognosis is excellent, but if, as in many cases, the surgeon is too anxious to avoid "disfiguring" the patient, and does not remove the whole growth, that the part which is left will undoubtedly "recur."

I cannot too strongly protest against the too common habit of treating cases, at the stage shown in the drawing, by scraping, or, rather, scratching, and the application of irritating caustics, which only lull the patient into a mistaken sense of false security. Cases which have got beyond the knife can be treated with caustics, such as **Resorcin,** with some prospect of temporary arrest, but were the disease more often recognized in its earlier stages, and recognized as cancer, there would be few cases indeed where the application of such would ever come into consideration. In this case, the disease has its most typical situation. A very large proportion of the cases which have been under my care have been seated almost exactly at this spot.

RUPTURE OF BLADDER. (See "Bladder, Diseases of.")

SALPINGITIS. *Theophilus Parvin, M.D., Philadelphia.*

Conservative Treatment in Liquid Collections in the Tubes.—Vulliet claims that the removal of the appendages, either with or without the uterus, is greatly abused, asserting that the proper treatment consists in the evacuation of the fluids by puncture, incision, drainage; in restoration of mobility and normal relations from rupturing, or stretching adhesions by massage, and in the employment of antiphlogistics.

Castration ought to be limited for cases which are so complicated that return to a normal state is hopeless, and for those in which the conservative treatment has failed. Finally, the stem pessary is useful as a drain in the treatment of metrosalpingitis.

SCABIES. *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

Görl strongly recommends a new ointment basis **Resorbin,** in the treatment of scabies. He finds that it penetrates more than any other known ointment, and is therefore especially useful in those cases where one wishes to penetrate into the skin. It should be useful in ringworm.

Battz[1] reports two cases of nephritis as the result of treatment with a 2 per cent of β-**Naphthol Ointment.** One of the children took pneumonia and died.

REFERENCE.—[1] "Central. Blatt. f. Med.," 1894, Nov. 37.

SCARLATINA. *Henry Dwight Chapin, M.D., New York.*

Dr. Ashmead[1] reports two cases of preventive inoculation of immunized scarlet fever blood serum. Two children who had not had the disease were inoculated from an older brother, aged nine years, who had had scarlet fever six years before. Two drops of blood serum, taken from a blister on his breast, were used for each child, and there was one inoculation only for each. These children were allowed free intercourse with another brother suffering from scarlet fever, but no infection followed.

Dr. Seibert[2] uses a 5 per cent. **Ichthyol Lanolin Ointment** to soothe the dermatitis accompanying scarlatina and other exanthematous diseases. Restlessness and high temperature are often due to intense inflammation of the skin, which may be reduced by a thorough inunction of the skin with this ointment.

Dr. Parker[3] believes that scarlatina and diphtheria are so closely related that the antitoxin treatment will be found of equal value in both in affording immunity.

Dr. Rosa Engelmann[4] draws the following conclusions in reference to scarlatina and the streptococcus infection: (1,) A specific scarlet fever germ or toxin is not yet demonstrated; (2,) The disease is associated with a streptococcus infection; (3,) A streptococcus is admitted to be the cause of surgical scarlatina and puerperal fever; (4,) A streptococcus is admitted to be the cause of erysipelas; (5,) The frequent association of the latter with puerperal fever, and it in turn with surgical scarlatina; (6,) The relation of idiopathic scarlatina to surgical scarlatina and puerperal fever is acknowledged; (7,) The identity of the streptococcus pyogenes and erysipelatis is advocated; (8,) Clinical records showing the association of suppuration, erysipelas and scarlatina in the same subject are suggestive of the parallelism of these three infections and the probable biologic identity of these

several streptococci; (9,) Clinical differences and varying susceptibility to the one or the other are due to heredity, age, anatomico-physiologic conditions, congenital disease, environment, life history of the invading host, and its avenues of entry; (10,) Idiopathic erysipelas should disappear from the nomenclature; analogously, idiopathic scarlatina may meet a like fate; (11,) Natural immunity may be due to heredity, and healthy, fully developed structure; (12,) Acquired immunity is to be sought from antitoxins of the disease, or through blood serum therapy that will revolutionize the treatment of this dread disease; (13,) Inunctions are disapproved of, antiseptic baths better meeting anti-bacterial and physiologic indications.

REFERENCES.—[1] "Med. Record," xlvi., 351, 1894; [2] "Arch. Ped.," Sept., 1895; [3] Ibid., April, 1895; [4] "Journ. Amer. Med. Assoc.," vol. xxiv., No. 10, 1895.

Synopsis.—(Vol. 1895, p. 272.) Jamieson considers **Peroxide of Hydrogen**, 10-volume strength, as the best throat spray; it may be used every two hours or three times a day. **Warm Baths** at night should be followed by smearing the skin with **Ac. Carbol**, ℥j; **Oil of Eucalyptus**, ℥ij—iv; **Almond or Olive Oil**, ℥viij. Soap must be used when desquamation commences. Rest in bed for three weeks; isolation until peeling is finished, and the hair washed several times. Flint advises a **Milk Diet** for one month after cessation of fever as prophylactic against nephritis; the diet has often to be modified, but a liberal allowance of **Warm Beverages** should be taken at each meal, and a mild diuretic or alkaline salt in water after each meal and at bed-time. The **Potash and Soda Salts** may be used alternately.

SCIATICA.

Græme M. Hammond, M.D., New York.

Mikulkine[1] speaks highly of the value of **Nitroglycerine** in the treatment of sciatica. He reports three cases in which this remedy proved to be of great value. He recommends the following preparation :—

℞ Alcoholic Solution of 1 % of Nitroglycerine grms. 75	Tinct. of Capsicum grms. 113 Dist. Peppermint Water grms. 225

Sig.—From 5 to 10 drops three times a day.

REFERENCES.—[1] "Lyon Médicale," Feb. 24, 1895.

Synopsis.—(Vol. 1895, pp. 8, 19 and 445.) **Asaprol**, 4 to 6 grammes, in cachets or solution. **Croton Oil** in small doses said to have some specific effect. Weir Mitchell (after ascertaining that no constitutional disorder exists) orders **Rest in Bed** constantly till recovery is assured, and **Dry Cups** used thoroughly and early, or a **Mustard Strip** at least three inches wide from notch to ankle or at least to knee. If these fail he used a firm bandage made of pure flannel from foot to groin, and re-applied twice a day. Bend leg slightly at knee, and keep it extended on thigh, and secure it thus to a right side splint from axilla to ankle, changing the ankle slightly at each dressing. Later, as pain goes, the joints are passively exercised

when bandages are re-applied. Three weeks or more are required for cure, and splint may be gradually left off by day and applied at night. **Cod-liver Oil**, good diet, attention to bowels, avoiding strain at stool. After pain is gone, **Massage** is used once a day before replacing bandages. **Counter-irritants** to points of persistent pain. In getting up standing must be gradual, and walking first practised with crutches, not allowing sitting for first week of getting up. **Nerve Stretching**, followed by **Roller and Splint-rest**, for obstinate cases. **Narcotics** occasionally, cocaine being best, $\frac{1}{4}$—$\frac{1}{2}$ gr. hypodermically.

SCLERODERMIA.

Synopsis.—(Vol. 1895, p. 446.) **Massage. Prolonged Sitz Baths, followed by Massage with Salicylic Vaseline. Glycerine. Faradaic Current to combat muscular atrophy. Static Electrical Discharges.**

SCLEROSIS (Insular). *Græme M. Hammond, M.D., New York.*

Buzzard[1] details five interesting cases of disseminated sclerosis in regard to which he makes some valuable observations. He refers to a number of cases of transitory palsies which he at first confounded with hysteria, and which completely deceived him until typical symptoms of insular sclerosis showed him his error. It must, therefore, be borne in mind that shifting palsies that affect one limb, and then another, and then disappear, should not be disregarded, or diagnosed positively as hysterical.

Syphilis also presents this symptom with more or less prolonged intervals of exemption, but it must be borne in mind that the history of the case, and the great tendency of syphilis to cause a more profound paralysis than is seen in insular sclerosis, as well as the effect of specific treatment, affords great assistance in making the diagnosis. The transitory palsy of insular sclerosis disappears spontaneously, whereas, in syphilis of the nervous system, the paralysis becomes more profound as a rule, until treatment induces a marked change for the better.

In forty-three out of a hundred cases of insular (disseminated) sclerosis, the author found decided evidences of optic atrophy. Amblyopia was observed in many others. This amblyopia is characterized by remissions and recurrences. This affords, according to Buzzard, a valuable symptom-group, not less important than tumour, irregular voluntary movements, and scanning articulation.

REFERENCE.—[1] "Lancet," Jan. 12, 1895.

SCLEROSIS (Lateral). (See "Bulbar Paralysis.")

SEXUAL IMPOTENCY.

Synopsis.—(Vol. 1895, p. 47.) **Saw Palmetto a useful nutrient tonic.**

SKIN (Diet in Diseases of). *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

At the London meeting of the British Medical Association, Dr. Walter Smith started with two propositions : "that the real influence of diet in the causation of skin diseases is a small one," and that "our substantial knowledge of this subject is very limited." He could not but believe that the ill effects of alcohol and of tobacco are exaggerated by their extreme opponents. He thought we should seek to train the public to observe for themselves whether such and such an item of diet agreed with them or not.

Dr. Jamieson directed most of his attack against tea, which he believes causes cold hands and feet, and shrinkage and withering of the integument. The patient may not appear anæmic, yet his eczema may be largely due to this. Hurry in partaking of meals is bad. Irregularity and haste probably aid in producing alopecia areata. Dr. Jamieson believes that the increase in some forms of cancerous disease is due to the abuse of tea.

Dr. Crocker agreed with Dr. Smith that the influence of diet was very much over-estimated, but that in practice, owing to the prejudices of patients one was sometimes compelled to order a course of diet. He emphasied the importance of good cooking. Beer and wine were more apt to do harm than pure spirit. Dr. Harrison thought dieting often did harm by not being sufficiently generous.

Dr. Myrtle had ceased to diet patients suffering from chronic skin disease. They should have plenty of good food. All stimulants were harmful unless in moderation. Dr. Thin did not believe that tea was responsible for so much. There were no marked ill effects in China and Japan. Shrivelled skin was not excessively frequent there.

McCall Anderson agreed with Jamieson. He regarded diet as a most important factor in treatment, and strongly disagreed with the principle of taking what you like. (N.B.—For Skin Diseases, see special articles.)

General Therapeutics of Skin Diseases.
Norman Walker, M.D., Ed.

Although there is nothing absolutely novel in the way of treatment in this year's literature, experience as to the use of certain modern remedies has extended.

That which has probably had most expected of it is the **Thyroid Gland.** There is hardly any single disease of the skin in which this treatment has not been tried. It has been most extensively used in psoriasis, with the most varying results. Some are enthusiastic about it, others the reverse.

Dr. Bramwell, the introducer of the treatment, does not claim that it is suitable to all cases, but that thyroid extract and thyroid extract alone, will cure many. He gives it in very large doses, so large that it is necessary to confine the patient to bed. He notes that in psoriasis very much larger doses can be given than in myxœdema.

Dr. Balmanno Squire reports absolute failure in the treatment of psoriasis with the same preparation as Dr. Bramwell uses.

Abraham has found it useful in many cases, but associated with many disadvantages. In future, he intends to use it only in cases in which other remedies have failed.

In lupus, the opinions are, perhaps, on the whole, more favourable. Several observers have noted a distinct improvement in the cases during the taking of the gland.

In ichthyosis the results have sometimes been very satisfactory, a very severe case under Dr. Bramwell's care improving very much indeed. Nobles[1] reports a case very much improved.

Preece[2] reports a case of a lady, long a victim to psoriasis, who recovered under thyroid tabloids. During the course the disease got worse, and it was found that the tabloids were unsatisfactory.

Wilson showed to the Clinical Society, of London, Feb., 1895, a case improved very much under thyroid.

Thibierge[3] reports to the French Congress of International Medicine on eleven cases of psoriasis, treated with thyroid. In three cases the effects were nil. One of them, however, in which the largest doses were given, developed most marked thyroidism. In the other eight, although the effect was good, the cases were not completely cured. His opinion is that it should not be employed as a matter of routine; it should be used for refractory cases, and the effects most carefully marked.

Auld[4] reports a case cured in a week by thyroid.

As the first patient on whom this remedy was tried (in skin disease) was a patient of my own, whom I handed over to Dr. Bramwell for treatment, I may be allowed to give my own experience and opinion of the remedy. It is beyond doubt that there are cases of psoriasis, which when treated in a hospital with full doses of the gland, get rid of their psoriasis. That this is directly due to the gland I do not for a moment doubt. But in a number of cases very large doses are required to bring about this improvement, and such large doses are quite unjustifiable in out-patient practice. Therefore, if small doses, say three tabloids, are not followed by improvement, it is advisable to fall back on some less risky remedy, than one so notoriously open to

serious accidents, as the thyroid gland. In one case of very chronic psoriasis, reported by Mr. Dale James, in which the gland was given in the first instance at my recommendation, the patient got very ill, and glycosuria developed.

In lupus I have certainly seen very great *improvement*, the hyperæmia diminishing, and many of the nodules sloughing out ; but I have never seen this improvement unless the patient were brought thoroughly under the influence of the drug to an extent greater than I should care to risk, except under my direct observation in hospital. But of one thing, I am quite sure, the disease can not be *cured* by thyroid ; it may be very much improved, but unless some other means of treatment be used it will assuredly relapse.

In a case of adenoma sebaceum, with some delay in mental development, the general condition was distinctly improved, but I cannot say that there was much improvement in the local condition. Indeed, there was not much to be expected in such a case. Such severe cases of ichthyosis as that under Dr. Bramwell's care are exceptional, but in one or two milder cases which have been under my care, I have certainly seen benefit result. My general position towards the treatment is, that in those cases which are readily controlled by other less dangerous drugs, such should be employed, but that where we are in difficulties and the patient is willing to lie by, then the preparation is sometimes of use.

Coal Tar is hardly a new remedy, but new methods of applying it now and again crop up. Leistikow[5] uses it diluted with an equal part of spirit, or with a little ether added. He uses it in dry forms of eczema of the hairy scalp, breast, etc., in psoriasis, especially on chronic patches on the knee and elbow.

Salicylate of Soda.—At the Dermatological Society (May, 1895), Crocker[6] read a paper, entitled, "The Internal Therapeutics of Psoriasis and some other Diseases of the Skin," which is chiefly of interest in connection with his recommendation of the salicylates in these diseases.

His first patient was a man, aged thirty-two, just recovering from quinsy, and the disease had only lasted a month. In a week there was great improvement, and in six weeks the disease was gone. Since then he had treated several cases, and had found remarkable improvement in extensive recent cases—just the cases in which arsenic and thyroid *do harm*. In only one case did the salicylate aggravate the disease, probably because in that case it produced gastro-intestinal disturbance. In one case of lupus erythematosus, there was much improvement. His conclusions were, that the drug was of most use

in psoriasis (of little use in eczema), and that it was most useful in hyperæmic cases.

In the discussion which followed, Liveing said that he had seen good results from salicylate, but that it was impossible to anticipate them. Stephen Mackenzie had been disappointed with the drug in various forms of erythema, and preferred thyroid extract in the treatment of psoriasis. Payne had more faith in large doses of iodide of potassium, and considered that no internal remedy was to be compared to a good external one. Harrison's (Clifton) experience was, that the administration of salicylates always produced much benefit; he had practically abandoned the use of arsenic in psoriasis.

REFERENCES.—[1] "Brit. Med. Journ.," March 30, 1895; [2] Ibid., March 30, 1895; [3]Ibid., Aug., 1895; [4]Ibid., July, 1894; [5]"Monats. f. pract. Derm.," Aug., 1894; [6]Proc. Dermat. Soc., Gt. Britain and Ireland.

SKULL (Injuries of). (See "Brain and Skull, Injuries of.")

SMALL-POX. *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

Moir[1] objects to Feilberg's plan of treating small-pox by **Red Light**; he says as much light as possible is wanted.

REFERENCE.—[1] "Lancet," Sept. 29, 1894.

SPINAL CORD (Surgery of the). *William Thorburn, F.R.C.S.*

During the summer of 1894, the present writer dealt fully with this subject in a course of lectures delivered at the Royal College of Surgeons,[1] as well as in the introduction to a discussion in the surgical section of the British Medical Association, at Bristol.[2] In the former lectures, the dangers of laminectomy were considered, and mortality after operation estimated at about 17 per cent., the future results being, however, most often due to the disease rather than to the operation. In my own practice there have been no deaths directly due to operation, but, among published cases, shock has been the most frequent cause of immediate mortality, septic troubles and hæmorrhage being rarely serious. Primary union of the wound is the usual result.

The question of repair of the injured cord was then considered from the clinical, anatomical, and physiological (experimental) standpoints, and it was concluded that the adult human cord has no power of recovery from a "destroying lesion," such as a cut or crush, but that recovery from pressure lesions is practicable and common.

The pathology and rational treatment of injuries were next dealt with, and I practically re-affirmed, after a wider experience, the conclusions which I have urged in former volumes of the "Medical

Annual." "In compound fractures, operate. In fractures of the spinous processes and laminæ, we also operate. In simple fractures and dislocations of the bodies of the vertebræ, if there is a reasonable probability that the injury is due to hæmorrhage, operation is advisable ; but in all other cases of this nature we cannot hope to do good save when the injury is below the level of the first lumbar vertebra. In cases of injury to the cauda equina, laminectomy is an eminently valuable surgical procedure."

The differential diagnosis of the various traumatic conditions thus becomes highly important, and was fully discussed in the Hunterian lectures, above referred to.

At the Bristol meeting, where the discussion was confined exclusively to the question of injuries of the spine and spinal cord, I divided these lesions into the following groups :—

(1,) Unilateral dislocations.
(2,) Bilateral dislocations with persistent displacement.
(3,) Bilateral dislocations with recoil (diastases).
(4,) Fractures of the bodies with persistent displacement.
(5,) Fractures of the bodies with recoil.
(6,) Fractures of the laminæ, spinous processes, etc.
(7,) Compound fractures.
(8,) Secondary lesions, as hæmorrhage, meningitis, etc.

The great majority of cases met with in practice belong to the second, third, fourth or fifth of these groups, *i.e.*, they are bilateral fractures or dislocations (or "fracture-dislocations") in which the cord is crushed between the displaced vertebræ, and in which either the bones recoil to their normal positions after the accident, leaving the cord free in the vertebral canal (groups 3 and 5), or the displacement is not corrected by nature, and the cord and theca remain jammed (groups 2 and 4).

The possible methods of treatment of these conditions are : (1,) By expectancy; (2,) By reduction of displacements; (3,) By laminectomy; and (4,) By fixation in plaster of Paris or other form of support. The expectant method is by no means always followed by death, even in severe cervical injuries, and not a few cases are on record of prolonged survival with extensive paralysis.

The reduction of displacements by forcible extension and manipulation, I regarded as a satisfactory procedure in unilateral luxations. In bilateral displacements it appears to me to be of little value, as the rectified position is difficult to maintain, and the cord is generally hopelessly crushed ; further, in the cervical region the proceeding is one by no means free from intrinsic danger.

Fixation by corsets is rather an adjunct to laminectomy and reduction, to be used during convalescence, than an active method of treatment.

The limitations of laminectomy were laid down as in the Hunterian lectures, just quoted.

In the discussion which followed the above remarks at Bristol, Burrell quoted statistics of one hundred and sixty eight cases, in about one half of which extension and rectification had been adopted with a percentage recovery of thirty-three, as against a percentage recovery of twenty-two among cases treated by the expectant method, but he acknowledged to having himself lost confidence in the extension method, and he advised operation in all cases at the earliest possible period after injury. Barclay, while admitting that laminectomy was useless in cases of recoil, urged its adoption in cases of persistent displacement, as well as in hæmorrhage, injuries of the laminæ and secondary pressure lesions. Damer Harrisson discouraged operation, and advised expectant treatment, with the use of perineal drainage of the bladder and fixation of the body by a double lateral splint. A number of interesting cases were related by other speakers.

The writer, in his lectures at the College of Surgeons, dealt also with the operative treatment of non-traumatic spinal lesions. With regard to *Caries of the Spine*, it was pointed out that paraplegia may arise from : (1,) Angular curvature *per se* in very few cases ; (2,) Fracture of carious vertebræ in 2 per cent. of all cases (Kraske) ; (3,) Bursting of abscesses into the spinal canal, hæmorrhage and compression by sequestra—all extremely rare ; (4,) Pressure upon the theca by granulation tissue, causing non-tubercular pachy-meningitis with anæmia or œdema and degeneration of the cord ; and (5,) Tubercular lepto-meningitis with intra-medullary tubercular periarteritis. Of these conditions, the fourth is by far the most common, and is that which we usually have to treat. The great natural curability of such cases was then dwelt upon, it being shown that recovery from paraplegia nearly always follows upon a careful expectant treatment, with absolute rest and fixation. Cases of intra-medullary periarteritis, and of fracture with crushing of the cord are, of course, hopeless, but they also are not amenable to operation. In the more common conditions the following were laid down as *indications for operation :* (1,) Steady increase of symptoms in spite of favourable conditions and treatment ; (2,) Presence of symptoms directly threatening life ; (3,) Extreme persistence of symptoms in spite of very prolonged rest ; (4,) Caries of the arches, in which radical removal of the tubercular disease is practicable ; (5,) Severe pain ; (6,) Childhood, as contrasted with later

life. *Contra-indications* are the presence of serious tubercular lesions in other regions, pyrexia (unless due to cystitis), and general meningitis.

The treatment of tumours and various other rare lesions was briefly dealt with.

Spina bifida occulta was also considered, and some cases recorded, operation being recommended for the relief of pressure symptoms.

Lejars,[3] in discussing the curability of *Spinal Injuries*, divides them into three groups: (*a*,) Cases exhibiting symptoms of compression of the cord with well-marked deformity of the spine; (*b*,) Cases with marked symptoms of compression, but with no deformity; (*c*,) Cases which immediately after the injury show neither deformity nor symptoms of compression.

(*a*,) Dealing with the first group, he examines Chipault's one hundred and sixty-seven cases of laminectomy for fracture. Of these thirty-three were relieved and eight cured by the operation, although two of the cures could merely "stand upright without support" ten and seventeen months after operation. With two exceptions, all these cures followed early operative interference, one an hour after the injury, two within forty-eight hours, and the remaining three from four to nine weeks. The other two cases were operated on after periods of four, and six and a half months. On the other hand, the author collects from various sources fifteen cases in which the spine was trephined within twenty-four hours of the injury. This series gives fourteen deaths with one survivor unrelieved by the operation. Of thirty-eight cases operated on during the first ten days, there were thirty-two deaths; four showed no improvement, one showed temporary relief soon followed by death, and only one could be regarded as cured.

In the cervical region, where however a simple dislocation may be present and may be reduced by very slight interference, Sonnenberg reports a case of complete recovery without operation. In the lumbar region, where the spinal canal is more roomy, many cases of partial recovery without operation are on record.

(*b*,) In the *second class*, cases of recovery without operation are more frequent. In many cases the symptoms are due to: (1,) *Intra or extra-dural hæmorrhage.* Sonnenberg reports twelve cases in which there was a distinct latent period followed by increasing paralysis and death at the end of some hours or days. Occasionally death is very sudden, and in some of these cases may be due to the displacement of fragments of bone, but in the majority arises from hæmorrhage; (2,) The cases of Lejar's second group are those attributed to *Concussion of the cord.* In one such case there were all

the symptoms of fracture followed by death on the twelfth day, yet, *post-mortem*, there were no signs of fracture or dislocation, simply disorganisation of a segment of the cord. Of the same type is a case recorded by Gussenbauer[4] in which there was no deformity or other sign of fracture, but pain over the eleventh and twelfth dorsal vertebræ, radiating to the legs, especially to the left one. There was anæsthesia over the left half of the abdomen, the sacrum, and back of both thighs. The left leg was entirely and the right partially paralysed, and the urine retained. Next day sensation was returning, and on the third day the motor paralysis was less. On the twelfth day the patient could flex his legs, and on the fourteenth sat up in bed. In a month he left the hospital on crutches, still showing some loss of sensation in the left leg; two years later he was practically well. Gussenbauer thinks that in this case the symptoms were due to small hæmorrhages in the substance of the cord.

(*c*,) In the *third class* Lejars includes many of the cases ascribed to traumatic neurasthenia, definite symptoms of compression only coming on as a rule at a late period after the accident. He makes two sub-divisions, and illustrates the first by a case of fall followed by paralysis of all the limbs, but with no sign of fracture. Six months later the patient had apparently completely recovered. Then, after five years, paralysis began in the legs, causing death twelve years after the accident. *Post-mortem* there were no signs of fracture, simply chronic inflammatory changes in the cord and nerves of the legs. In cases belonging to another class, there are practically no symptoms immediately following the accident. Then after some months slowly progressing paralysis of the limbs begins, and causes death in a year or two. In one such case *post-mortem* examination showed a large organised intra-dural clot extending from the first cervical to the second dorsal segment of the cord.

Biddle[5] records fourteen cases of laminectomy for fracture seen during the last five years. In ten the cord was found hopelessly crushed. Two recovered and are fit for work, two still under treatment, but much improved. When the injury has been caused by very localised violence, as in one of the above cases, where the patient was struck by the sharp corner of a box, a fracture of the laminæ alone seems rather to be indicated, and operation is justifiable. In ordinary cases, however, there is practically no evidence as to the condition of the cord, and little good is likely to result from immediate operation. By waiting, some idea may be formed as to the extent and nature of the lesion, and as to the advantage or otherwise of surgical interference. Neither Biddle's nor any other of the

numerous cases reported during the last two years, supply any additional reasons in favour of routine laminectomy for fracture-dislocation.

Walton[6] discusses the question of manipulation in *cervical dislocation*. The only form which exists without fracture is the unilateral or bilateral displacement forwards of the articular processes. All authorities recommend extension as the essential in reduction, and extension often of the most violent kind. In the case recorded, and in experiments made on the cadaver (all muscles being removed), pure extension had no effect at all on the dislocation. In another case, after prolonged extension had been tried, the patient was sent home paralysed, but was relieved by spontaneous reduction taking place while being bathed; and in yet another case spontaneous reduction occurred during sleep. The rule given is to "perform retro-lateral flexion toward the side to which the face (not necessarily the head) is turned by the dislocation, and then rotate back to place." With regard to the question of the length of time after which successful reduction may be made, four months are given as the limit. Attempts should always be abandoned if the displacement is not easily overcome.

Starr[7] makes a most important contribution to the diagnosis and treatment of *Tumour of the Spinal Cord*. He has collected one hundred and twenty-three cases, in one hundred of which the diagnosis of tumour could be reasonably made, and in fifty-four of these some conclusion as to the possibility of successful surgical interference could be arrived at. From the pathological point of view, he finds that in seventy-five of these one hundred cases the tumour could have been removed. In addition to the above, he collects twenty-two cases which were subjected to operation, with eleven recoveries, *quoad vitam*, including six in which symptoms of paraplegia were relieved. In two cases the tumour could not be found, and in one, although found, it could not be removed. Three personal cases are reported in which the tumour was removed—one an extra-dural sarcoma, probably secondary to sarcoma of the pancreas; one a lipoma in which death took place from tubercular caries of the spine higher up; and one, tubercular in its nature, in which there was, temporarily, very marked improvement in the paraplegia.

As regards diagnosis, the pain is rarely, if ever, unilateral by the time paraplegic symptoms appear; for, when large enough to compress the entire cord, it has necessarily invaded the posterior roots on both sides. This fact the author considers most important in diagnosis, and he notes a case in which persistent pain along the

sixth dorsal nerve accompanied by paraplegia led to trephining for tumour with no result. At the autopsy, nothing but a non-compression myelitis with neuritis of the nerve was found. Pain in the spine itself is rare till late, and then localised at a point one or two inches below the tumour. In no case has tenderness along the nerves in which pain is felt been recorded, a point which is of importance in the differential diagnosis of neuralgia and neuritis.

The order in which symptoms of compression originate is: (1,) Pain; (2,) Increased reflexes; (3,) Paralysis; (4,) Anæsthesia; (5,) Loss of reflexes. In very few cases is there typical Brown-Séquard paralysis, *i.e.*, paralysis and hyperæsthesia on the side of the tumour, and anæsthesia on the opposite. Trophic disturbances and cystitis are as a rule late, while in chronic myelitis they appear early in the case. Syringo-myelia is never limited to a single segment of the cord, and acute or sub-acute myelitis is always of much more rapid course. Chronic myelitis of slow progress, without disease of the bones or meninges, and without tumour is very rare. As regards the distinction between intra and extra-dural tumour, the characters of the former are: Brown-Séquard paralysis before paraplegia, early atrophy and reaction of degeneration, early trophic changes and analgesia before anæsthesia. It is not unlikely that death in some cases has been due to concealed intra-dural hæmorrhage.

In connection with the diagnosis of spinal tumour, the observations of Scalfati[8] are interesting. It is now pretty generally admitted that syphilis may produce myelitis both directly and indirectly, and that the direct myelitis may be acute. He gives three chief clinical types of spinal syphilis: (1,) A pure spinal meningitis, characterised by a nocturnal rachialgia, which is very rare. This nocturnal pain in the spine corresponds exactly to the nocturnal headache of syphilis; (2,) The meningo-myelitic form which presents two distinct phases, the meningitic symptoms coming on before the paralysis, and being usually associated with the headache, optic neuritis and paralysis of cranial nerves indicative of cerebral meningitis. This type of meningitis, commencing in the brain and travelling downwards, is typical of syphilis, but in many cases the meningitic symptoms are slight or wanting; (3,) The third type is that of pure myelitis.

Bruhl[9] calls attention to the spinal deformity, a scoliosis which accompanies and is a consequence of sciatic neuritis. As pressure on the lumbar or sacral plexus may result from caries and abscess, the point may be an important one, more especially as, in rare cases, the deformity may be one of kyphosis or lordosis. The scoliosis may

be (1,) Crossed, the body being inclined to the sound side; (2,) Homologous, the inclination being towards the affected side; or (3,) Very rarely, alternating. Occasionally the deformity comes on a few hours after the pain begins, but more usually it is noticed in old cases. If not of too long duration, relief of the sciatica may result in complete cure. As regards the explanation of the deformity, many suggestions have been made. The author goes back to Charcot's original idea, and explains the crossed variety simply by the removal of the body weight off the limb on the affected side. When the scoliosis is homologous, it seems most likely that the neuralgia affects the lumbo-sacral plexus, and that the body is inclined so as to relax the muscles supplied by the affected nerves.

The question of *Laminectomy for Spinal Caries* is discussed by Parkin,[10] who, from observations on six cases, comes to the following conclusions: (1,) That extension and counter-extension have little or no effect on the paraplegia; (2,) That laminectomy has, in most cases, an immediate effect on the paralysis due to caries; (3,) That relapses from extension of tubercular disease may take place; (4,) That the operation does not interfere with the future stability of the spinal column. In relation to the question of diagnosis of tubercular caries, Marsh[11] calls attention to the very close resemblance which the symptoms of this disease in its acute form bear to those of a malignant growth of the spine. The pain and deformity are of almost identical character, but he concludes: (1,) That in malignant disease pain is a much more prominent feature from the first; (2,) That the disease advances much more rapidly than caries, and deformity makes its appearance usually in the course of a few weeks; (3,) Paralysis, at first in a single limb, or even in a single group of muscles, is often an early sign, and instead of tending to pass off, as is the case of paralysis due to Potts' disease, when the spine is placed at rest, in malignant disease it tends, steadily, and often rapidly, to become worse and worse. In many cases there will be evidence of primary carcinoma or sarcoma in the breast or elsewhere. In two cases of primary sarcoma of the spine, the growth was incised as an abscess.

The value of *Tapping the Vertebral Canal*, recommended by Quincke both as a means of relieving pressure symptoms in acute hydrocephalus, and as a means of distinguishing between serous, purulent, and tubercular meningitis, was noticed in the "Annual" for 1894, p. 526. It is stated by Ziemssen and Lichtheim[12] that in cases of cerebral tumour, a sugar reaction was observed which was absent in cases of meningitis, while less albumen was also found in the former

affection. Fürbringer[13] found tubercle bacilli in twenty-seven out of thirty-seven cases of tubercular meningitis, one of which ended in recovery.

Caillé[14] gives four cases in which tapping was adopted to relieve pressure symptoms in chronic hydrocephalus. He recommends the interval between the third and fourth lumbar spines just to the right of the middle line, and finds the vertebral canal at a depth of about 4 cm. In chronic hydrocephalus he considers the procedure safer than that of tapping the cranium.

REFERENCES.—[1]Partly published in the "Brit. Med. Journ.," 1894, vol. i., pp. 1,345 and 1,401 (Thorburn); [2]Ibid., 1894, vol. iv., p. 909 (Thorburn and others); [3]"Gaz. des Hopitaux," June 2, 1894; [4]"Prag. Med. Woch.," Nos. 40 & 41, 1893; [5]"Med. and Surg. Reporter," Mch. 30, 1895; [6]"Boston Med. and Surg. Journ.," Dec. 7, 1893; [7]"Amer. Journ. of Med. Sciences," June, 1895; [8]"Rif. Med.," Jan. 14, 1895; [9]Gaz. des Hôpitaux," Nov. 4, 1893; [10]"Internat. Journ. of Surg.," Jan., 1895; [11]"Lancet," Sep. 30, 1893; [12]"Neurolog. Centralblatt.," May, 1893; [13]"Berlin. Klin. Woch.," Nov. 13, 1893; [14]"New York Med. Journ.," June 15, 1895.

SPINE (Surgery and Injuries of the). (See "Spinal Cord.")

SPLEEN (Surgery of). *A. W. Mayo Robson, F.R.C.S.*

Splenectomy.—The present position of this operation may be briefly summarised as follows: In tumours, hypertrophies, or other splenic enlargements attended with danger or serious disability, and which do not yield to medical treatment, splenectomy is indicated, as also in severe splenic injuries with or without external wound. In abscess and in cystic disease, incision and drainage should be first adopted.

In movable or floating spleen, the operation suggested by Plücker, or simple suture, should be tried if a pad and belt do not afford sufficient relief; these measures failing, splenectomy may be justifiable. In leucocythæmia the operation is unjustifiable.

Mr. Spanton[1] gives a paper on splenectomy with his experience of operations on three cases, two being followed by fatal results. In an addendum to his paper, Mr. Spanton remarks: Since my paper on splenectomy, I have been enabled through the courtesy of Mr. J. Bland Sutton to add sixteen other cases to the list then tabulated. The additional cases give the following figures as the total up to that date, and it is very interesting to note that the last seventeen recorded by various surgeons have all recovered. The figures now should stand as follows:—

Table I.—Leucocythæmic	..	..	25 cases 24 deaths.
Table II.—Non-Leucocythæmic	..	75	,, 28 ,,

This gives the death-rate for the last three decades thus :—

1866-75	.. ..	75·00 per cent.
1876-85	.. ..	59·25 ,,
1886-95	.. ..	16·21 ,,

A progressive decrease as instructive as it is encouraging.

Mr. Bland Sutton[2] reports three consecutive cases in which he had performed splenectomy, with recovery in each :—

(1,) Enlarged spleen, with recurrent jaundice, in a girl seventeen years of age. Jaundice caused by enlarged spleen becoming engorged with blood, when the patient was going about, dragged on the stomach, causing kinking of the duodenum and common bile duct.

(2,) Enlarged spleen ; anæmia ; girl aged five years.

(3,) Enlarged and movable or "wandering" spleen, in a woman aged thirty-two years.

Dr. W. Wagner[3] reports a successful case of splenectomy performed for a large sarcomatous floating spleen. Microscopically the organ consisted of round cells with large nuclei, no proper spleen tissue being visible.

A successful case of splenectomy for acute splenitis, owing to twisting of the pedicle in a movable spleen, is reported by Dr. Conklin, in the "Medical Record," July 28, 1894. It clearly shows that floating spleen is not devoid of danger.

On the Use of Steam in Removing Tumours from Parenchymatous Organs.—Snegisjeff[4] reports a case of echinococcus which he removed from the spleen by the following method. The tumour was the size of a man's head. The incision was in the linea alba. The jet of steam was directed on to the larger convexity of the spleen, and the subjacent tissue at once became white and dry. A completely bloodless incision, 7 inches long, was then made through the splenic tissue, and the tumour peeled from its surroundings by the finger. Whenever hæmorrhage, which was sometimes violent, occurred, it ceased at once when steam was directed on to it, and in this way the whole tumour was shelled out. It was then decided to suture the incision in the spleen except at one spot, to pack the cavity with iodoform gauze, to make a small incision in the left hypochondrium, and to stitch the spleen to the abdominal walls. In doing this the splenic artery was pricked and bled profusely, but hæmorrhage ceased on the application of steam. Unfortunately the artery became thrombosed, and after ligaturing it the spleen was completely removed. The patient recovered. Although owing to the accident to the splenic artery the intended treatment could not be carried out in this case, yet it is evident that an echinococcus or other tumour could be removed

from any organ, instead of extirpating the latter. The steam is best superheated to 150° to 200° C. In the case of soft organs the steam must not be at high pressure, and must always be directed obliquely on to the bleeding spot. In operations on bones the steam must be at high pressure.

REFERENCES.—[1] "Brit. Med. Journ.," Nov. 2, 1895; [2] "Lancet," Oct. 19, 1895; [3] "Verhandl. der Deutsch. Gesellsch. für Chirurgie," xxiii. Kongress, 1894; [4] "Berliner Klinik," April, 1895, p. 13, and Epitome, "Brit. Med. Journ.," May 11, 1895.

SPRAIN (Sprained Ankle). *Priestley Leech, M.D., F.R.C.S.*

TREATMENT.—There has been, and rightly so, a great reaction from the treatment of sprained ankle by a fixed apparatus. Bradford[1] says fixation by apparatus is only necessary if demanded to stop pain for a short time after a severe sprain. In the early stages motion within the pain limit is harmless; in later stages motion and use should be allowed up to the point of pain, and in some instances in hypersensitive persons guarded and protracted motion even beyond the point of pain is indicated. Compression may be advisable for a short time during the period of effusion; after that it becomes injurious. To improve the circulation applications of heat and cold and rubbing are needed from the first, and the use of the limb, when permissible through absence of pain, is a natural means of improving circulation and nutrition.

The over-cautious treatment may develop a disabled joint which is more tedious than a fracture.

V. P. Gibney[2] describes the following method of treating sprained ankle. It is not a new method but was first employed as far as he can learn by Mr. Edward Cotterell of London. For a sprain about the external malleolus, a strip of rubber plaster 12 inches long and an inch wide is applied, beginning at the outer border of the foot near the little toe and ending on the inner side of the foot about its middle just under the plantar arch. The second strip is applied vertically, and passes from about the junction of the middle with the lower third of the leg, down alongside the tendo-Achillis, over the heel, and terminating at a point just above the internal malleolus but posterior to this. The remaining strips are applied in the same way, each overlapping the other about one half until the whole external malleolus and side of the foot up to the middle third of the leg is covered. It is well to reinforce just under the malleolus by strips passing cross-wise, so as to give additional support to the part sprained. The ankle is not completely encircled, so there can be no constriction. When the sprain involves the tarsal-

joint itself or the mid-tarsal joint, and where the whole foot is involved it is put up as follows: The first strip starts on the inner side of the heel, passes back of the heel below the external malleolus over the dorsum of the foot, and terminates just under the ball of the great toe. The second strip is started just under the external malleolus, passes over the back of the heel, over the front of the foot, and terminates just under the outer side of the foot near the small toe. The subsequent strips are applied over-lapping upwards above the two first strips, as previously described. He sometimes applies extra strips up and down over the tendo-Achillis, the ends terminating in the sole of the foot. Over the ankle thus strapped a cheese-cloth bandage is applied, beginning at the ball of the foot and extending up to the middle of the leg. The patient begins to walk a little the next day. If the toes are swollen the whole ankle must be strapped. Every toe should be separately strapped before the ankle dressing is applied. He gives notes of several cases treated successfully by this plan.

A simple method of treating sprained ankle which I have successfully used for some time past is as follows: For the first two days the ankle is wrapped in lint which has been dipped in hot **Lead** and **Opium Lotion.** Over this is applied rubber tissue, or oiled silk or paper, so as to completely cover in the lint. A little wadding is then applied around the joint, and the whole firmly bandaged from the toes to a little above the ankle. The dressing is renewed two or three times a day, and at each renewal the joint is moved gently until pain is felt, and gentle massage is used in the region of the sprain. On the third day, or in some cases even on the second day, a thin layer of absorbent cotton is applied around the ankle with smaller pieces packed around the external malleolus, or wherever the sprain is most marked, and over this a Martin's bandage or a bandage of elastic-webbing is applied from the toes to the lower third of the leg. The patient then begins to walk about the room, and as a rule is walking pretty well in a week. The bandage is removed every night and the joint well massaged.

REFERENCES.—[1] "Therap. Gaz.," Dec. 15, 1894; [2] "New York Med. Journ.," Feb. 16, 1895.

STERILITY. *Theophilus Parvin, M.D., Philadelphia.*

Stem Pessary.—Lefour[1] reported satisfactory results from the use of stem pessaries, made of aluminium, in cases of sterility without any other apparent lesion than stenosis of the cervix, dysmenorrhœal pains of different origins, and of miscarriages repeated apparently from uterine intolerance.

After dilatation the stem is introduced, and then retained in

position by a silver wire passed through the cervix about one centimèter above the external os, the ends of the wire being twisted. The stem is left in place never less than six months, and in some cases, fourteen months.

REFERENCE.[1]—Bordeaux Congress of Gynæcology, Obstetrics, and Pædiatrics, Aug., 1895.

STOMACH (Diseases of). (See also "Epilepsy" for Treatment of Irritability of Stomach.) *W. Soltau Fenwick, M.D., M.R.C.P.*

I.—ABNORMALITIES OF STOMACH.

Hour-glass Contraction.—Saake[1] reports the case of a woman, aged sixty-seven, who died with the symptoms of disease of the stomach. At the necropsy an hour-glass contraction of the organ was found, which was obviously of congenital origin. The orifice between the two compartments was so narrow as only to admit the passage of a pencil, while in the pyloric portion a large cancerous growth was discovered.

Hirsch[2] has published an elaborate survey of the various cases which have been recorded of stricture of the body of the stomach. He distinguishes two varieties, one, congenital, and the other, acquired. The former is most prone to occur in women, many of whom live to an advanced age. The constriction occurs in the centre of the organ, and is usually of such a nature that the stomach has the appearance of two pouches connected together by a narrow passage several inches in length. In the majority of the recorded cases, the mucous membrane of one or both portions of the organ had suffered from some secondary lesion, such as ulceration or cancer. The acquired form of gastric contraction usually arises from the cicatrisation of a simple or cancerous ulcer, more rarely from the pressure of fibrous bands in the peritoneum. In this variety the stricture is encountered at the pyloric end of the stomach.

Gastroptosis.—Homen and Schauman[3] report the case of a woman, twenty-nine years of age, who presented the signs of a congenital dislocation of the stomach. The first symptoms of the affection made their appearance during childhood, and consisted of abdominal pain, flatulence, headache, and constipation. About the age of fifteen, these symptoms became aggravated, and vomiting occurred at irregular intervals. When the patient came under observation the stomach was found to occupy an abnormally low position in the abdomen, but its motorial and excretory functions were not appreciably altered.

Abrams[4] has recorded the details of a remarkable case of gastroptosis. The subject was a man, twenty years of age, who suffered from neurasthenia with gaseous distention of the stomach. In his efforts to expel the flatus he had acquired an extraordinary power over his diaphragm. Thus, by voluntary contraction of certain portions of this muscle he could depress the apex of the heart about two inches, dislocate the right kidney toward the navel, compress the aorta, and shift the stomach in all directions, at one moment depressing it to the pubes, and at the next draging it up under cover of the ribs. This patient could also ruminate at pleasure by throwing the stomach into a vertical position, and could produce a phantom tumour in the epigastrium by swallowing air and relaxing the muscles of the abdominal wall. All these phenomena were demonstrated by the help of the gastrodiaphane.

Rumination.—Singer[5] describes four cases of this curious condition which have come under his notice. He thinks the regurgitation of the food is due to a congenital inefficiency of the cardiac sphincter, which permits the contents of the stomach to pass into the œsophagus during inspiratory efforts. In the treatment he recommends that hasty eating and drinking be prohibited, and the patient be advised to prevent the return of the food as far as possible. Medicinal remedies should consist of sedatives and antispasmodics.

Runge[6] draws attention to the fact that rumination is often an hereditary complaint, and quotes a case in which the disease occurred in three successive generations.

II.—Cancer of Stomach.

Diagnosis.—Koch[7] reports a case in which cancer developed in the scar of a simple chronic ulcer. The contents of the stomach always contained free hydrochloric acid. The author, therefore, believes that when ulcer and cancer are present in the same individual, the secretion of the mineral acid may persist for a considerable length of time, and consequently lead to a mistaken diagnosis.

Cohnheim's[8] observations go to support the statement of Boas that the presence of an excess of lactic acid is diagnostic of cancer of the stomach. This observer found that in ten cases where the filtered contents gave a brilliant reaction with Ueffelmann's solution, the necropsy in each instance demonstrated the presence of gastric cancer: on the other hand, in cases of chronic gastritis and dilatation, lactic acid was never found.

Strauss[9] has examined one hundred cases of gastric disease with reference to the production of lactic acid. He finds that the great

majority of the cases of cancer of the stomach are accompanied by the presence of lactic acid, while the existence of this product of fermentation under other conditions is extremely rare. In every case of cancer the secretion of hydrochloric acid was greatly diminished.

In opposition to these statements, Klemperer[10] has found that in 20 per cent. of the cases of cancer of the stomach examined by him, there was an absence of lactic acid. It would likewise appear from the writings of Rosenheim,[11] Zawadski and Bial, that chronic gastritis, resulting in atrophy of the mucous membrane of the stomach, is often accompanied by an excessive production of this organic acid.

Lepine[12] draws attention to an important distinction between the blood in cases of cancer and pernicious anæmia. In the latter disease the hæmoglobin value of the corpuscles is often reduced to one-half, while in the former it remains unaffected.

Bogdan[13] believes that a crimson patch upon either cheek, arising from dilatation of the superficial vessels, is a frequent sign of cancer of the stomach, and one which is of considerable importance in the early diagnosis of the disease.

TREATMENT.—Huchard[14] recommends **Chlorate of Sodium** in daily doses of 4 drachms. This salt is less toxic than the chlorate of potassium. Patients who have been treated in this manner for twelve months have been much relieved, the appetite having improved, the pain diminished, and the vomiting stopped. The salt also appears to exert a beneficial influence upon the secretion of hydrochloric acid.

Miribaum[15] advocates the employment of **Pyoktanin**, and advises that 1 grain be given in the form of a pill, three times a day, after food. Should it give rise to nausea, it may be combined with **Belladonna**, or administered as a suppository. The chief value of the drug lies in the improvement of the digestion and the diminution of the cachexia, which results from its employment.

Wright[16] reports favourably of the use of suppositories composed of the **Mosquera's Peptonised Beef Meal.** In one instance, a patient of his subsisted for many months upon this form of alimentation, one suppository being given three times a day.

III.—DILATATION OF STOMACH.

Diagnosis.—Aufrecht[17] draws attention to two signs of dilatation of the stomach, which he considers of some importance in diagnosis. He finds that when percussion is made with a pleximeter over the dilated organ, comparative dulness is often elicited, instead of the usual tympanitic note. If, however, a few seconds be allowed to elapse and the percussion be then repeated, the characteristic resonance

will be obtained This phenomenon appears to arise from the contraction of the hypertrophied walls of the dilated viscus. The second sign consists of a cracked-pot sound, which can often be obtained in the neighbourhood of these temporarily dull areas.

Sequelæ.—Mongour[18] describes a case in which uræmia ensued as the result of dilatation of the stomach. The patient was a man, twenty-eight years of age, who, after a heavy meal, was seized with pain, vomiting, and diarrhœa. When the attack subsided he continued to suffer from occasional pains in the abdomen, accompanied by dyspnœa and a tendency to vomit. The emesis gradually increased in frequency and severity, and when he came under medical observation the stomach was found to be considerably dilated. Within the next few months the patient developed albuminuria, and finally succumbed about eighteen months after the commencement of his illness to Bright's disease, with uræmic coma. The author believes that in this case the renal disease was an immediate result of the elimination by the kidney of certain noxious products manufactured in the dilated stomach.

TREATMENT. — Dujardin - Beaumetz[19] describes several simple methods for the treatment of cases of dilated stomach. He recommends that the patient should sleep on the right side, in order that the force of gravity may aid the transmission of the food into the intestine. That a glass of **Hot Water** should be taken an hour and a half after each meal, in order to stimulate the muscular tissue of the stomach, and a natural **Alkaline Water** shortly before food, to promote the gastric secretion.

Broadbent[20] discusses the treatment of dilatation of the stomach in all its aspects. According to this author, the amount of fluid taken with the meals should be strictly limited, and the food administered at regular hours. All excess of starchy food should be avoided, and the patient be advised to sip a tumblerful of warm water during the progress of the meal. As wines are apt to ferment, recourse should be had to good whisky or brandy. Pain during the process of digestion must be combated by alkalies. **Sulphite of Sodium** in 10-grain doses, combined with **Carbonate of Sodium** and **Nux Vomica,** is the most reliable means of preventing decomposition of the food, but occasionally **Carbolic Acid, Creasote,** or **Sulphocarbolate of Sodium** are more effective. When other methods fail, **Lavage** may be resorted to.

Jasewski[21] has found that **Phenol-Bismuth, Cresol-Bismuth,** and **β-Napththol-Bismuth** are split up in the stomach, the cresol and phenol being eliminated in the urine. As these drugs do not produce toxic

symptoms, he believes them to be valuable in the treatment of gastric fermentation.

Brück has experimented with **Benzonaphthol** in cases of disease of the stomach, and is inclined to think very highly of it as an antiseptic remedy.

In cases of dilated stomach from benign stenosis of the pylorus, Ogston[22] recommends a new method for the cure of the stricture. He has contrived a series of *spheres*, composed of gutta-percha, and graduated according to the scale of the French urethral bougies. Commencing with the smallest, he administers it to the patient immediately after breakfast, and then allows him to pursue his usual avocation. Day by day the size of the sphere is increased, until at length the appearance of cramping pain in the region of the pylorus denotes that it has some difficulty in passing the stricture. When this point has been reached, the treatment is continued with caution, and a sphere is only administered about every five days. As soon as unpleasant symptoms cease to follow its ingestion, a size larger is tried, and so on until one possessing a diameter of 40 mls. can be given without discomfort. The author relates a case in which this method was adopted, and states that he was able to dilate the stricture from 16 to 40 mls. in eight hundred and ten days. The patient experienced great relief, and finally regained his normal health.

IV.—Inflammation of Stomach.

Pathology.—Hayem[23] recognizes three varieties of chronic gastritis: (1,) Hyperpeptic: (2,) Atypical; (3,) Mucous. The hyperpeptic form resembles in its microscopical features the parenchymatous inflammation of the kidney. The gastric glands are distended with cells, derived partly from the peptic cells and partly from leucocytes. The disease progresses very slowly, and in its early stages is capable of arrest, but if it be allowed to advance unchecked it gives rise to sclerosis of the mucous membrane of the stomach.

Bret and Paviot[24] cast doubts upon the inflammatory origin of the linitis, described by Brinton. In three cases which have come under their observation, the thickened tissue, when submitted to the microscope, was found to present the appearance of cancerous infiltration.

Soltau Fenwick[25] describes a case of membranous inflammation of the stomach in a child who succumbed to pharyngeal diphtheria. The whole of the inner surface of the organ was found at the necropsy to be covered with membrane which, on microscopical examination, exhibited the typical features of diphtheritic exudation. During life the child had repeatedly vomited after taking food, and on each occasion

the ejecta were found to be devoid of hydrochloric acid. The author points out that a cessation of the gastric secretion always precedes the formation of membrane upon the surface of the stomach.

A curious case of simple membranous gastritis is described by Thomson[26]. The patient in this case was a child suffering from pulmonary tuberculosis, who on several occasions vomited pieces of membrane, which were, apparently, casts of the stomach. Examination of this membrane failed to demonstrate the presence of any pathogenic bacilli, and after death the stomach merely presented the signs of severe congestion.

Diagnosis.—Rosenheim[27] relates the case of a woman, aged fifty-eight, who suffered from anorexia, vomiting, and headache. A tumour was discovered in the epigastrium, and the contents of the stomach exhibited an excess of lactic acid, but no free hydrochloric acid. For these reasons gastric cancer was diagnosed. At the necropsy, however, the tumour was found to have arisen from simple thickening of the pylorus, while the disease of the stomach was not cancerous, but of a chronic inflammatory nature.

TREATMENT.—*Dietetic.*—Saundby[28] discusses the pathology and treatment of an ordinary bilious attack, and shows that in cases of this kind the symptoms arise from acute catarrh of the stomach. He recommends that all irritating substances should be excluded from the dietary, and that foods containing saccharine and starchy principles should be avoided. For breakfast, a patient recovering from acute gastric catarrh, should take coffee or weak tea, a slice of broiled white fish, and a piece of toast without butter. For luncheon, white fish, toast, custard pudding, and a little claret diluted with mineral water. For dinner, white fish, boiled or roast chicken, mutton, custard, jelly or blanc mange. No soup, vegetables, or cheese should be allowed.

Medicinal.—Coronedi[29] finds the **Bromide of Strontium** extremely useful when administered in doses of 30 grains, twice a day, immediately before the meals. The drug appears to act as an analgesic and gastric sedative.

Cantu[30] considers that **Duboisine** is a valuable remedy in cases of catarrh associated with an excessive secretion of acid, since he has found that the drug possesses the power of diminishing the gastric secretion. He advises its administration in doses of $\frac{1}{32}$ to $\frac{1}{6}$ gr. by the mouth, and $\frac{1}{32}$ to $\frac{1}{16}$ gr. by hypodermic injection.

Discussing the treatment of chronic gastritis, Robin[31] recommends that the intestinal action should be encouraged by means of a pill containing **Aloes, Scammony, Jalap**, and **Extract of Belladonna.** To

increase the appetite the patient should suck a piece of **Quassia** shortly before the meal, or take a milligramme of **Quassin.** Pain during the process of digestion is best relieved by a decoction of **Condurango,** while fermentation in the stomach can be easily controlled by the help of **Naphthol** or **Fluoride of Ammonium.**

Perry[32] finds that **Lavage** is of great value in the treatment of both acute and chronic gastric catarrh. By its means it is often possible to cut short an acute attack in a day or two, while cases of the chronic type yield rapidly to daily lavage, and are sometimes cured in a few weeks.

V.—Tumours of Stomach.

Westphalen[33] relates a case of myxo-sarcoma of the walls of the stomach. The patient, a man, twenty-five years of age, had suffered for a year from intense pain in the epigastrium, associated with vomiting and dyspepsia. When he came under observation he was considerably emaciated, and an ill-defined tumour could be felt in the region of the stomach. The acidity of the gastric contents was notably diminished, and after a short time the secretion of hydrochloric acid ceased altogether. The diagnosis was made during life by the circumstance of the patient vomiting pieces of sarcomatous tissue.

Ebstein[34] reports a case of a similar nature in a man, twenty-two years of age. After death, secondary deposits were found in the kidney and heart.

Bittner[35] has observed three cases of syphilis of the stomach in infants. In each case, small gummata, the size of peas, were found scattered through the mucous and sub-mucous coats of the organ.

VI.—Ulceration of Stomach.

Etiology.—Soltau Fenwick[36] contributes an elaborate paper on the etiology of acute perforating ulcer of the stomach in young adults, and shows by experiment that ulcers artificially induced in lower animals differ in many respects from the idiopathic form of the disease. He then describes the anatomy of the solitary lymphatic glands of the stomach, and traces the pathological results which may ensue from acute inflammation in these structures. Finally, he relates several cases in which disease of the solitary glands gave rise to typical perforating ulcers. As the result of his pathological and clinical researches, he concludes that in many cases of acute gastric ulceration in young people, the process commences in the lymphatic structures of the stomach.

Luxenburg[37] relates the history of a young man who suffered from symptoms of gastric ulceration, which rapidly led to death. At the

necropsy, a chronic ulcer, situated at the pyloric end of the organ, was found to have arisen from syphilitic disease of the arteries.

Rochemont[38] records the case of a woman who died with all the symptoms of cancer of the stomach, associated with an absence of free hydrochloric acid. After death, a simple chronic ulcer was discovered in the immediate neighbourhood of a mass of cancerous disease, and was due to thrombosis of one of the small arteries. From these facts, the author concludes, in opposition to the usual belief, that free hydrochloric acid is not an essential factor in the production of gastric ulcer.

In a curious case related by Netter,[39] a calcified cyst in the liver exerted pressure upon the coronary artery, and produced a large ulcer in the stomach.

Stoll[40] offers some valuable statistics with reference to the occurrence of ulcer of the stomach. He finds that at Zurich, three thousand four hundred and seventy six necropsies were performed between the years 1884 and 1892, and among them, only seventy-five ulcers or scars were found in the stomach (2·16 per cent.). The disease affected 1·83 per cent. of the male subjects, and 2·59 per cent. of the female. In men the ulcer usually occupied the pyloric region, and in women the lesser curvature. The majority of the patients were between forty and fifty years of age at the time of death.

Results.—Pick[41] discusses the subject of perforation of the diaphragm by an ulcer of the stomach with the help of twenty-eight cases collected from the literature. In ten cases the ulcer occupied the lesser curvature of the stomach, and of these, six perforated the pericardium, three the left pleura, and one the mediastinum. In each of the five cases where the ulcer was found in the fundus, the left pleura was opened by the progress of the disease. In three instances the ulcer occupied the cardiac region, and of these, two perforated the left pleural sac, while the third found its way into the pericardium. Three times a chronic ulcer was discovered in the pyloric region of the organ, and of these cases, one penetrated the right lung, one the left lung, and one the wall of the chest. All the ulcers found on the posterior wall of the stomach perforated the left pleural cavity, while the single instance in which the disease was situated on the anterior wall, the substance of the heart was involved.

Diagnosis.—Einhorn[42] has published an interesting contribution upon the pathology of erosion of the stomach. He describes several cases in which he found small pieces of the mucous membrane of the stomach in the washings of the organ in the early morning. These exfoliations measured ·3 to ·6 ctm. in diameter, and were of a

bright red colour. Under the microscope they exhibited a well preserved glandular structure.

TREATMENT.—Stepp[43] has found the greatest benefit to ensue from the employment of large doses of **Subnitrate of Bismuth.** He recommends that the drug be given along with **Chloroform Water.**

Boas[44] prefers **Nitrate of Silver** for the treatment of chronic ulceration, and for this purpose employs $\frac{1}{22}$ of a grain daily in divided doses.

Rankin[45] reviews the results of ten cases of gastric ulcer which he treated with **Papain** and the extract of **Cannabis Indica.** In each instance the result was satisfactory, and in many of the cases the author thinks that the disease was cured.

REFERENCES.—[1]"Virchow's Archiv.," 134, p. 181; [2]Ibid., 140, p. 459; [3]"Finska Lakaresallsk," 1893, p. 35; [4]"Medical News," 1895, p. 405; [5]"Deut. Arch. für klin. Med.," 51, p. 572; [6]"Boston Med and Surg. Journ.," 132, p. 515; [7]"Brit. Med. Journ.," May 24, 1894; [8]"Deut. med. Woch.," 20, p. 438; [9]"Zeit f. klin. Med.," 26, p. 514; [10]"Deut. med. Woch.," 1895, p. 218; [11]"Berl. klin. Woch.," 31, p. 39; [12]"Bullet. Medic.," Sept. 24, 1893; [13]"Bull. Soc. Med. Roumania," Nov. 1, 1894; [14]"Rev. Gen. de Clin. et Therap.," 8, p. 217, 1894; [15]"St. Louis Med. Journ.," July, 1894; [16]"Lancet," p. 1,511, 1895; [17]"Occ. Med. Times," Aug., 1894; [18]"Archiv. Cin. de Bord.," p. 524, 1894; [19]"Bullet. Gen. de Therap.," 33, p. 38; [20]"Brit. Med. Journ.," 2, p. 1,268, 1893; [21]"Arch. Scien. Biol., St. Petersb.," 2, 1893; [22]"Lancet," 1, p. 739, 1895; [23]"Bull. Med.," May 14, 1893; [24]"Path. Trans.," 45, p. 60; [25]"Rev. de Med.," 14, p. 384, 1894; [26]"Archiv. Pediat.," f. 286, 1895; [27] Op. cit.; [28]"Clin. Journ.," 5, p. 389; [29]"Lo Sperim.," 3, 1892; [30]"Med. Record," April 21, 1894; [31]"Bull. de Therap.," p. 459, 1895; [32]"Journ. Amer. Med. Assoc.," July 28, 1894; [33]"St. Petersburg med. Woch.," 45; [34]"Archiv. de Med et Phar.," Dec., 1892; [35]"Prag. med. Woch.," 18, p. 48; [36]"Journ. of Path.," June, 1893; [37]"Wein. Med. Presse," 35, p. 1,917; [38]"Munch. med. Woch., 41, p. 1,007; [39]"Bull. Soc. Anat.," p. 504, 1894; [40]"Deut. Arch. f. klin. Med.," 53, p. 566; [41]"Zeit. f. klin. Med.," 26, p. 452; [42]"Med. Record," p. 780, 1894; [43]"Therap. Monats.," Nov., 1893; [44]"Rev. de Sci. Med.," July 15, 1894; [45]"Lancet," 1, p. 333, 1895.

Synopsis.—(Vol. 1895, pp. 48 and 458.) In acute catarrh abstinence from all food for twenty-four hours, or at least a teaspoonful of **Liebig's Extract** dissolved in a teacupful of hot water and a small piece of very dry toast every four hours, or a little **Beef Jelly,** or a little **Milk** diluted with one third part of **Lime Water.** This combined with a **Blue Pill,** a **Saline Aperient** and **Bismuth Mixture.** Boiled or broiled sole or whiting may be allowed later, with a little lemon juice squeezed over it, and dry toast; a cold baked custard or calve's foot jelly may be allowed, but without wine. **Aërated Mineral Waters,** with a dash of claret or slice of lemon, is best beverage. Later still, boiled chicken, boiled or stewed mutton chop free from fat. If tea is desired it must be infused with milk instead of water. As convalescence progresses, a little mashed potato with meat and a little

butter with dry toast. In chronic catarrh avoid all condiments, salads and all uncooked or badly cooked vegetables, or fruit, and all containing skins, seeds and fibres, also mushrooms, onions, carrots, parsnips, turnips; avoid also brown bread and oatmeal porridge, and all fat, including butter, fat meats, such as pork and veal; oily fish, *e.g.*, eels, mackerel and salmon; fat poultry, such as duck and goose; strong tea; strong wines and spirits; malt liquors; or much sugar or preserves. Bread well toasted may be used, and starchy and farinaceous foods sparingly; all fruit or vegetables must be soft and well cooked; any alcohol must be well diluted, and never taken on an empty stomach. *Dilatation.*—Same rules as for catarrh, but five meals daily of not more than four or five ounces each should be taken; pyloric obstruction demands great care that no solid lumps of food be introduced; very little liquid with meals, but between them the required quantity may be taken. **Milk** and **Meat** in form of dry powder may be used as a thick gruel. **Saline Aperients** are indicated. *Ulcer of stomach.*—If possible, stop all food, except by rectum, *e.g.*, a **Nutrient Enema** of one beaten up egg and milk up to four ounces may be used every four hours, or a teaspoonful of brandy may be added. In a few days stop enemata and give iced milk, 1 ounce per hour, gradually increasing to two ounces, then **Benger's Food**, soft bread and milk, minced chicken and minced mutton, as they can be borne. **Sulphate of Iron** and **Sulphate of Magnesium**, the latter in aperient doses, should be given. *Cancer of Stomach.*—Diet as in catarrh. **Saline Aperients** and **Mercury** often assist. **Sod. Chlorate**, ʒij—iv daily mixed with water, 100 grammes, and given in teaspoonfuls, has proved useful. Gastric neuroses demand rest for body and mind, and often dieting must be discouraged. Small quantities, *e.g.*, half to an ounce of milk per hour if vomiting is marked, but the diet should be increased by rapid stages, as in ulcer. **Tea** in moderation, except in acute attacks, when it must be forbidden—it may be infused with milk instead of water. **Alcohol** in small quantity, greatly diluted; **Light Wine** is best; **Malt** is usually not tolerated; spirits are generally mischievous.

STOMACH (Surgery of). *A. W. Mayo Robson, F.R.C.S.*

The surgery of the stomach has progressed equally during the past year with that of the rest of the alimentary canal.

Pyloroplasty in Simple Pyloric Stenosis.—Of the operations performed for this condition, I prefer pyloroplasty, not only because of its immediately good results, but because there is no tendency to subsequent relapse. The immediate risk of this operation is slight, if the patient be in fair condition, and, in any case, is not greater, perhaps less, than in Loreta's operation.

In these cases it is neither fair to the surgeon nor to the patient to defer the operation by following out medical treatment until the subject is so far reduced that any operative treatment involves great risk of death from shock or exhaustion.

I have modified the original operation of pyloroplasty by the employment of the decalcified bone bobbin. In the "British Medical Journal," for 1895, will be found a report of three cases, treated by this modification, all of which recovered and gained enormously in

weight. From my experience, I think I am justified in claiming for the modification, greater safety; equal simplicity; and enhanced certainty; as the bone bobbin secures an immediate and thoroughly patent canal, and affords protection to the newly sutured visceral wound.

Time is saved by the use of but two sutures, both continuous ones, the one uniting the mucous margins, the other the serous surfaces. The following diagrams (*Figs.* 40, 41, 42 and 43) show the old and modified method :—

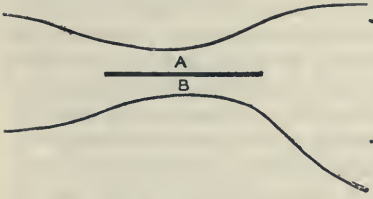


Fig. 40.—First Stage.

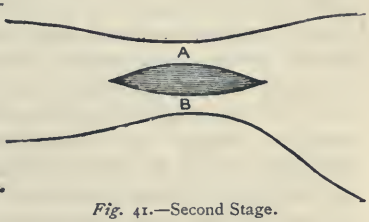


Fig. 41.—Second Stage.

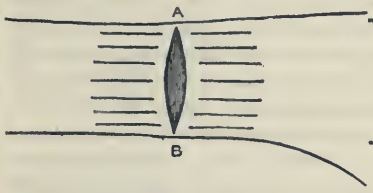


Fig. 42.—Third Stage of the original method.

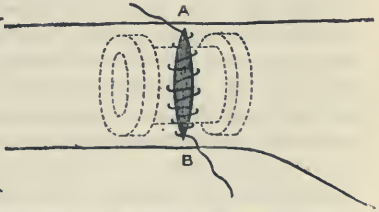


Fig. 43.—Third Stage of the modified method, as employed in the cases related in text.

Dr. Markoe[1] reports a successful case of pyloroplasty for cicatricial contraction of the pylorus in a man, aged forty-nine years. Typical pyloroplasty had been performed after the method of Heincke-Mikulicz. The patient gained 26 pounds in weight in eighty days.

Total Extirpation of the Stomach.—"La Tribune Médicale," for January 16, 1895, briefly outlines Langenbuch's contribution[2] on this subject. Three patients were thus treated, one surviving. The first case was a woman, fifty-eight years old, exhibiting classical symptoms of cancer of the stomach, with tumour in the left hypogastrium. On opening the abdominal cavity, the stomach was found much contracted, and exhibited on its posterior surface an extensive cancerous infiltration. No metastases were found in the neighbouring organs. The stomach was drawn out from the belly and section was made at the pylorus and the cardiac extremities, after division of the epiploön.

The portion removed represented seven-eighths of the stomach. The pylorus was stitched to the remains of the cardiac orifice, making a cavity about the size of a hen's egg. Fearing lest the sutures might give way, the new stomach was fixed in the abdominal wound by passing behind it a piece of iodoform gauze; the rest of the abdominal wound was closed. The operation lasted one and a half hours.

In the evening the patient received a little milk; the next day there was slight fever. On the third day meat was given. Convalescence was rapid, and cure was accomplished in three weeks.

The second case was a man, fifty-six years old. Almost the entire stomach was removed, and the pyloric and cardiac ends were stitched together in the parietal wound. On the third day the sutures gave way and the dressings were soiled by the contents of the stomach. Effort was then made to feed the patient by a catheter passed into the duodenum through the stomach opening. This method failing, the patient was fed by the rectum. He perished on the sixth day from inanition. On autopsy, peritonitis was found strictly limited to the region where the sutures had given way.

The third case was a man, sixty-two years old, suffering from cancer of the pylorus. After pylorectomy, the line of suture was secured in the parietal wound and was protected behind with iodoform gauze packing. Unfortunately, the patient was affected with bronchitis, and the coughing caused the stitches to give way, so that alimentation could only be accomplished by a catheter introduced into the duodenum, and the patient perished of inanition on the twenty-third day.

Gastro-Enterostomy for Non-Cancerous Affections.—Doyon[3] reported at the Académie de Médecine a number of cases in which he had performed gastro-enterostomy for non-cancerous affections, and particularly for diseases other than fibrous stenosis of the pylorus or duodenum. His early observation showed him that all painful sensations experienced by dyspeptics—hæmorrhage, non-cicatrization of ulcers, etc.—were due entirely to reflex spasm from the pylorus. In all, he has operated on twenty-five cases; in eleven of these for pyloric or duodenal stenosis. Of the remaining fourteen cases with which his communication has especially to do, six, who had no appreciable ulcer, were completely cured of the dyspepsia. From the time they became conscious after anæsthetization they experienced no further pain, and remained perfectly well afterwards.

In a paper by Dr. John B. Murphy[4], on "Analysis of Cases Operated with Murphy Button," the following points are emphasized:—

(1,) Gastro-enterostomy should never be performed on an extremely cachectic patient;

(2,) Von Haker position is preferable ;

(3,) A supporting suture outside the button is not necessary, except for the relief of tension ;

(4,) In non-malignant structure of pylorus, the end of the duodenum should be united to the posterior wall of stomach ;

(5,) Pylorectomy should always be resorted to where possible ;

(6,) The patient should receive liquid nourishment immediately after the effects of the anæsthetic pass away.

The button was used in twenty-seven cases of gastro-enterostomy, required for the relief of obstruction due to malignant disease. Nine of these cases perished—four from exhaustion, two from imperfect operation (too small a button in one case, failure to press the button tight enough in another), and three from peritonitis due to infection at the time of operation.

The Surgical Treatment of Cancer of the Stomach.—Quénu[5] advocates the following treatment in cases of gastric cancer affecting the pyloric region. He would perform an exploratory laparotomy with the object of making out with precision the seat and nature of the disease, and of determining whether or not the new growth be amenable to a radical operation. If the pyloric cancer could not be directly attacked and removed by operation he would perform gastro-enterostomy. If, on the other hand, there were good prospects of removing the whole of the diseased structures he would also establish an anastomosis between the stomach and jejunum, and, after an interval of from ten to fifteen days, perform pylorectomy. The removal of cancer of the pylorus in two stages presents, it is maintained, important advantages. In the first place, by a preliminary gastro-enterostomy the duration of the subsequent operation of pylorectomy is much shortened, and, in the second place, when the patient has been much enfeebled through inanition, the first operation permits of speedy renewal of vigour by nourishment, and consequently favours more resistance against the immediate results of the serious operation of gastrectomy. The author has used Murphy's button, and recommends it to his colleagues. In one of his cases of gastric cancer, although he had had no previous experience of this appliance, he performed gastro-enterostomy in less than twenty minutes, much of the time having been taken up in exploration of the tumour and its connections. The objections that have been made to its use he regards as theoretical rather than real and practical. The button, he has no doubt, can be expelled from the intestinal canal by the normal way, and in his own practice he has had no reason to suspect any subsequent contraction of the gastro-jejunal fistula.

Mr. Paul Swain[6] describes an interesting and successful case of gastrotomy with removal of a mass of matted hair, weighing 5 pounds 3 ounces, from the stomach of a girl, aged twenty.

The Operative Treatment of Gastric Ulcer.—Küster[7] reports the case of a woman, aged twenty-one years, upon whom he operated for frequent and severe hæmorrhage from the stomach. Upon exposing the stomach it was found much dilated. On incising its wall a large, deep ulcer, with undermined edges, was to be seen in the posterior surface. The ulcer, which was adherent to the pancreas, was burnt with the thermo-cautery. As the pyloric orifice was so small that it could not be found readily, it was decided to perform gastro-jejunostomy, the opening being made two and one-half inches in width. The patient recovered, and when last seen there had been no recurrence of the hæmorrhages. She was able to take her usual food and to work with comfort.

Küster draws the following conclusions from this case :—

(1,) Hæmorrhage from a gastric ulcer may be arrested by a single application of the actual cautery.

(2,) When the gastric ulcer is situated near the pylorus, gastro-enterostomy is preferable to pyloroplasty, as the latter will not prevent cicatricial contraction and stenosis.

(3,) A wide anastomotic opening between the stomach and intestine is in no sense a disadvantage, but, on the contrary, will insure the patient against the risk of undue contraction later.

Gastric ulcers cicatrize in about 85 per cent. ; over 6 per cent. perish from perforation ; 3 per cent. to 5 per cent. from hæmorrhage. The ulcers placed on the posterior surface of the stomach perforate commonly into the pancreas, causing a sub-diaphragmatic abscess and suppurative pleurisy ; of those on the anterior wall, 85 per cent. perforate, generally into the peritoneal cavity[8].

The fatal issue in these cases of perforation is peritonitis, which, when threatening life, must be treated by operative interference as soon as the primary shock has passed off. Cleansing the peritoneum is aimed at by flushing the abdomen with solution of common salt, 1 drachm to the pint. This is the best medium; the next is boiled water at 110° to 112°F. If practicable, the hole in the stomach is sewn up, Lembert sutures being so applied as to invert the flow of the ulcer, and a part of the surrounding walls. Drainage is usually employed.

Mr. Maclaren[9] reports three cases of perforation of the stomach treated by operation, one successfully. He holds that it is not worth while to spend much time in washing out the stomach in these cases.

He also emphasizes the importance of thorough cleansing of the abdominal cavity. This should be gone over systematically, and with a large, continuous stream. He begins in the neighbourhood of the rupture, washes it thoroughly, then follows the course of the colon towards the cæcum, especially washing out below the liver. Next, beginning at the ulcer, the great bowel is followed to the rectum. The lumbar and pelvic hollows should receive special care. Finally, the douche is directed among the folds of the mesenteric attachments of the small intestines. It often happens that when all seems clear a fresh turn of the instrument will empty some unexpected pocket. The abdomen should be dried with sponges in the usual way. Feeding should be per rectum for a week.

Mr. Morrison reports a case operated on by Aitchison. The ulcer was in the posterior wall. The patient died on the ninth day, of peritonitis limited to the pelvis.

Mr. Barling reports three cases of perforation from gastric ulcer, two perished. The successful case was opened three weeks after operation for a circumscribed collection of pus in the left hypochondrium.

Mr. Cousins incised and drained two cases with successful results.

Küster[10] reports a second case of gastric ulcer successfully treated by incision of the stomach, thermic cauterization, and gastro-enterostomy. The subject of the present record was an emaciated man, aged forty-two, who for six years had suffered from frequent attacks of pain in the stomach, and of vomiting. In the spring of last year, the vomited matter, and also the stools, were deeply stained with blood. The stomach for some months before the patient came under the author's notice, had been much dilated. The stomach was exposed by an incision made in the middle line of the abdominal wall above the navel. An ulcer could be felt in the posterior wall of the viscus near the pylorus. An incision having been made through the anterior wall of the much dilated stomach, parallel with the greater curvature, the cut edges were widely separated, and the thermo-cautery applied to the surface of the ulcer, which was about the size of a five-pfennig piece. Communication was next established between the stomach and the jejunum. The progress towards recovery was much disturbed by frequent distension of the stomach by abundant yellow fluid, for the removal of which it was found necessary to wash out the organ very frequently in the course of the first five days following that of the operation. Besides this hindrance, large accumulation of blood and serum in the external wound rendered it necessary to remove some of the external sutures and to separate the edges. The patient

when discharged at the end of six weeks was free from pain in the stomach, and able to take both solid and fluid food without discomfort. Two months later he was still in good health, and had increased considerably in weight.

Mr. R. F. Jowers[11] reports a case of perforated gastric ulcer successfully treated by laparatomy performed four hours after rupture.

Twelve days after operation the patient, who was at the time taking three ounces of milk and three ounces of mutton broth alternately, every two hours, was suddenly seized with intense pain, vomiting, etc. Another perforation was suspected, and the abdomen reopened, but nothing found to account for the symptoms, save adhesion of the anterior wall of the stomach to the site of the abdominal incision, and also of the site of the excised ulcer to the posterior layer of the lesser omentum. About a month later the patient had a similar attack.

Mr. F. T. Paul[12] reports a case of perforated gastric ulcer successfully treated by gastrostomy, and subsequent drainage with one of his glass tubes.

The perforation was placed at the cardiac end of the lesser curvature where, owing to its awkward position and the difficulty of manipulation, it was felt that immediate suturing could not be relied upon in case of subsequent gastric distension.

The tube was removed fourteen days after the operation, leaving a sinus which had completely closed a fortnight later. Six weeks after operation she was in perfect health.

Mr. Barling[13], in his lectures on "Perforating Gastric Ulcer," impressing the importance of early treatment, says: "In concluding my lecture on this subject, I wish to urge upon the profession the necessity for early diagnosis and treatment of this terribly fatal accident, gastric perforation. The influence of early operation is shown by the following figures: In nine operations performed with success, the average time which intervened between perforation and operation was $7\frac{1}{3}$ hours, the longest being 10 hours and the shortest 3 hours. The time of operation is really the dominant factor of success. In fifteen unsuccessful operations, the average time intervening between perforation and operation was 27 hours; the shortest was 4 hours, and the longest 70 hours. Unless surgery has an opportunity within the first six or nine hours after perforation, the mortality must remain great. Given the opportunity for intervention as soon as the primary collapse has passed off, I believe the results will improve very much. If my lecture assists in enforcing the lesson, it will not have been given in vain."

Mr. John Thomson[14], of the Edinburgh Sick Children's Hospital,

reports a case of "Congenital Hypertrophy of Pylorus and Stomach Wall," where the child died twenty-six days after birth from uncontrollable vomiting.

Post-mortem, viscera normal except: *Œsophagus*, dilated; *Stomach*, distended; *Pylorus*, much thickened, and on moderate pressure would not allow passage of fluid into duodenum; *Muscular wall of stomach* much thickened, at pylorus especially.

The hypertrophy was supposed to have been caused by strain and over-action of the muscle, dependent on some faulty development of the nervous mechanism.

REFERENCES.—[1] "Annals of Surg.," December, 1894; [2] "Therap. Gaz.," March 15, 1895; [3] "La Tribune Médicale," December 19, 1894, and "Therap. Gaz.," February 15, 1895; [4] "Med. News," February 9, 1895; [5] "Rev. de Chirurg.," October, 1895, and "Brit. Med. Journ.," 1895; [6] "Lancet," June 22, 1895; [7] "Cent. für Chir.," 1894, No. 30; [8] "Brit. Med. Journ.," October 20, 1894; [9] Ibid., No. 51, 1894; [10] "Cent. für Chir.," and "Brit. Med. Journ.," January 12, 1895, also Epit., September 15, 1894; [11] "Lancet," March 2, 1895; [12] Ibid., July 6, 1895; [13] "Brit. Med. Journ.," June 15, 1895; [14] Ibid., September 21, 1895.

STRABISMUS. (See "Eye, Diseases of.")

STRICTURE AND ULCERATION OF THE RECTUM.

Herbert William Allingham, F.R.C.S., Eng.

E. Fraenkel[1] from a study of nine cases has discussed the morbid anatomy of ulcers of the rectum leading to stricture. The bearing of the etiology of stricture upon its radical treatment has been studied by Dr. Bryson,[2] and the etiology, diagnosis and treatment of ulceration of the rectum have received notice from Dr. Mathews.[3] The latter regards the microscope as no infallible guide for the diagnosis of malignant ulceration, and still holds the opinion that fully one half of cases of ulceration of the rectum arise from syphilis.

After many unsatisfactory results in treating stricture of the rectum by other methods, Dr. Bacon[4] has performed what he terms a new operation for the cure of strictures of the rectum and sigmoid. This consists in forming a new channel around the stricture by folding the gut immediately above the constricted portion of bowel down over the stricture, and anastomosing it by means of Murphy's button, with the rectum just below the narrowed part of the gut. Later on he performs the second, but the really important part of the operation by clamping away the septum produced by the union of the approximated surfaces of the folded piece of gut with the rectal wall. In this manner a new channel is added to the calibre of the rectum

and all fæcal obstruction is removed. In cases where the stricture involves the levator ani, or the gut above, he first performs a laparotomy before effecting the anastomosis ; in cases where the stricture extends down almost to the internal sphincter, he uses the sacral method. When the sigmoid mesentery is normal in length strictures of the sigmoid may be treated in the above manner.

REFERENCES.—[1] "Münch Med. Woch.," June 11, 1895 ; [2] "Mathew's Med. Quart.," Jan., 1894 ; [3] quoted in "Mathew's Med. Quart.," April, 1894 ; [4] Ibid., Jan., 1894.

SYCOSIS. *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

Cantrell,[1] of Philadelphia, recommends **Salol** 20 grains to an ounce, but admits that it is only of use in some cases.

Boisseau du Rocher[2] succeeded in curing a very obstinate case within three months, by **Electrolysis**, using 10 to 15 needles.

REFERENCES.—[1] "College and Clinical Record," July and Sept., 1894, and the "Therap. Gaz.," Feb. 15, 1895 ; [2] "Journ. des Malade Cutanée," 1895, Parts ii-iii.

SYPHILIS. *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

An attempt has been made to treat this disease also with **Antitoxin.** Bonaduce[1] obtained the serum from three children born with hereditary syphilis, and under strict antiseptic precautions it was injected into the subcutaneous tissue. The result was remarkable. No other treatment was used and the patient completely recovered.

Tommasoli has used the serum of calves and lambs, arguing that, as they are immune to syphilis, they must have in the blood some antitoxin.

Fournier has used the serum of the horse and dog, and Pelizzari suggests the use of the blood serum of those patients who are in the transition between the secondary and tertiary stages.

Surgeon Menzies[2] recommends the horse as likely to supply a syphilis antitoxin, since it suffers from a constitutional affection remarkably like the human disease.

Wolff read, before the Philadelphia Med. Soc., a most interesting paper on the treatment of syphilis by hypodermic methods. One of the most interesting points in his paper was the tables which he had compiled, after eliciting by letter the opinions of the leading Syphilologists of the world. Every country is represented by its most eminent men, and the first striking point is that hypodermic medication in syphilis is almost unused in England. In fact the only

British Dermatologist who admits making use of it is Prof. McCall Anderson. The method has many advantages, it is cleanly, and though it can hardly be called gentle, it is speedy and sure.

The preparation of mercury used varies very much. **Sublimate** is most employed, no doubt because it is the simplest, but **Calomel,** the **Salicylate, Yellow Oxide, Sozoiodolate** and **Gray Oil** all have their advocates.

Some use the injections daily, others only once or twice a week. Some give a definite number of injections, others go on till all symptoms have disappeared. The opinion of twenty-three of the correspondents is that hypodermic medication has superseded the internal administration of mercury. While inunction is more powerful than the injection of soluble salts, the injection of insoluble ones is quite equal to it. As to the rapidity of action and permanence in result, calomel seems to hold the first place. In using sublimate the dose should be from a $\frac{1}{4}$ to $\frac{1}{8}$ of a grain; others recommend $\frac{1}{10}$ every third day. Injections are sometimes made in the buttock, sometimes in the inter-scapular region.

Lang[3] vaunts the claims of an old friend, **Sarsaparilla,** of which Prof. Syme said that its effects were nearly equal to those of a fresh decoction of hay. Lang finds that cases which are not yielding to specifics often do so in a wonderful manner to a strong decoction of this drug. In giving **Pot. Iod.,** he makes it up in pills with **Lanoline.**

REFERENCES.—[1] "Monatsh. f. Pract. Dermat,"; [2] "Brit. Med. Journ.," March 2, 1895; [3] "Centralblatt. f. d. Gesammte Therap."

SYPHILIS OF THE NERVOUS SYSTEM.

Græme M. Hammond, M.D., New York.

Raymond[1] looks upon general paresis of syphilitic origin as a diffuse vascular encephalitis. He does not, however, claim that all cases of vascular encephalitis are due to syphilis. The vascular lesions in the cases he describes are situated in the cortex, and are also irregularly distributed through the cord in patches. At first these changes occur in the smaller capillaries only.

Paresis, he thinks, supervenes only where the neurons suffer from defective nutrition. The power of resistance of the neurons varies, but sooner or later the cardinal nerve tissue gives way, and encephalitis supervenes. The neuroglia hyperplasia superinduces a more pronounced and more or less masking sclerosis. Heredity and feeble powers of resistance play a very important *rôle* in the etiology.

REFERENCES.—[1] "Archives de Neurologie," No. 84, 1894; "Periscope Journ. Nerv. and Ment. Dis.," Jan., 1895.

TALIPES. (See "Orthopædics.")

TATTOO MARKS.

Synopsis.—(Vol. 1895, p. 467.) Tattooing with **Glycerole of Papoid** is often useful, also for gunpowder stains.

TEETH.

Synopsis.—(Vol. 1895, p. 473.) *Simple gingivitis.*—If not due to mercury or iodide of potassium give a brisk purge, followed by **Vegetable Acids**, *e.g.*, oranges and lemons; an antiseptic tooth-wash night and morning, *e.g.*, a few drops of **Listerine**. In obstinate cases pack powdered **Sulphate of Copper** down under edges of gums with a wooden point for several days, and then use as mouth-wash: ℞ Pot. Chlor., ʒij; Sod. Bibor., ʒj; Pot. Nitrat., ʒss; Tinc. Arnicæ, ʒij; Aq. Rosæ, ad ʒviij; M. Tartar must be scaled off most carefully, none being left, and then **Hydrogen Peroxide** syringed up under the gums. The following may be used: ℞ Ac. Glyc. Carbolici, ʒiv; Ac. Tannici, ʒj; Pot. Chlor., ʒij; Sod. Bibor., ʒj; Aq. Rosæ ad ʒviij; M. A powder: ℞ Cret. Prep., ʒiv; Pulv. Radicis Iridis, ʒiij; Pulv. Saponis Alb., ʒvj; Ol. Eucalypt., ʒss; Otto Rosæ, ♏vij; M. If tissues are turgid, thickened and inflamed, **Chloride of Zinc**, 20% solution, must be applied with a syringe under the edge of the gums. If there is much destruction of tissue apply every four days with a brush: ℞ Ol. Cinnamomi, ʒiv; Ol. Gaultheriæ, ʒiv; Ac. Carbol. (Xtals), ʒj; M. In phagedænic pericementitis remove calculi, trim off alveolar wall, jagged bone, etc. Syringe out pockets with **Peroxide of Hydrogen** solution, containing 1 gr. perchloride per ounce; then syringe in a solution of 30% **Chloride of Zinc**. Repeat these every day for a week, then every four days syringe with peroxide and introduce with a brush the before-mentioned **Cinnamon, Gaultheria** and **Carbolic Mixture**, which may also be applied daily by the patient if diluted with an equal quantity of **Oil of Lemons**.

TENDO-ACHILLIS (New Method of Shortening).

Priestley Leech, M.D., F.R.C.S.

Phocas proposes the following: A median incision two inches long is made over the tendon, the sheath is opened and the tendon carefully denuded. It is then transfixed laterally by a bistoury so as to divide it into an anterior and posterior flap. The knife is carried down the middle of the tendon by a sawing motion and the posterior flap is cut away above and below. The anterior part is now thin enough to be folded on itself; this is done and the freshened surfaces sewn together with catgut. The sheath and skin are closed separately, and the foot put up in the equinus position in a fixed dressing.

REFERENCES.—"International Journal of Surgery," Jan., 1895, quoted by "Therap. Gazette," Feb. 15, 1895.

TETANUS. *Priestley Leech, M.D., F.R.C.S.*

The treatment of tetanus by **Antitoxin** is still on its trial, and the value of the remedy is not yet decided. Hewlett[1] gives the reasons for this. The disease is only recognized at a late stage when the toxins are already circulating in the blood, and there is no local lesion

to aid in the diagnosis. In the same paper he gives a description of the mode of preparation of the remedy and the doses employed.

Hurry Fenwick[2] reports a case with an incubation period of ten days successfully treated by means of antitoxin.

Bauar[3] also reports a case, incubation period seven days, treatment with **Tizzoni's Antitoxin** and **Chloral**; death following in three days.

Caretti[4] reports a case of kopftetanus successfuly treated by antitoxin; period of incubation six days. He refers to another case of kopftetanus treated successfully with Tizzoni's antitoxin, by Guisti and Bonajuti, reported in the "Gazzetta degli Ospitali," No. 56, 1894.

Makeig Jones[5] gives notes of another case of kopftetanus cured by injection of Tizzoni's antitoxin, incubation being only three days.

Cuff reports a case of tetanus which also recovered under antitoxin treatment.

Preobrajensky[6] relates four cases treated by **Chloroform Inhalations, Hot Baths** and subcutaneous injections of **Morphia.** Three recovered; one died from catarrhal pneumonia on the seventeenth day.

REFERENCES.—[1] "Brit. Med. Journ.," Mar. 2, 1895, p. 464; [2] Ibid., Feb. 23, 1895, p. 418; [3] Ibid., Dec. 22, 1894; [4] "Rif. Med.," Jan. 17, 1895; [5] "Quart. Med. Journal," Jan., 1895; [6] "Brit. Med. Journ.," Epitome Feb. 9, 1895, p. 24.

Græme M. Hammond, M.D., New York.

With Tizzoni's antitoxin Hewlett[1] states the dose varies, from 2 drachms to 1½ ounces, according to the weight of the patient. Of the fluid serum, 5 to 10 drachms are used at the first dose, but after this only 1 or 2 drachms are used. Of the dried serum, the first dose is from ½ to 1 drachm, followed by doses of from 15 to 30 grains. Tizzoni recommends about 15 grains of his antitoxin at the first dose, and about 6 grains for each subsequent dose. Generally, the amount and frequency of the injections of antitoxin are based on the urgency of the case and the subsequent amelioration. The serum is harmless, and gives rise to no ill effects. In children the amount of the injection may be diminished, but not below half of that for adults. The manner of administration is always by subcutaneous injections. Aseptic and antiseptic principles should be observed in all the details of the operation from cleaning the syringes to washing carefully the part to be punctured. It must not be forgotten that heat is inimical to the vitality of the antitoxin, and, therefore, the sterilized water must be allowed to cool before diluting the dried preparations, or removing the syringe from its bath.

The author has collected the details of fifty cases treated by antitoxin; only sixteen deaths occurred, which gives a mortality of 32 per cent.

Von Hæker[2] reports a case cured by inoculations of antitoxin (Tizzoni). The patient was a boy of thirteen, who had cut his thumb, and shortly afterwards developed tetanus. The boy was narcotized, and the wound, which was suppurating, was thoroughly scraped. On the same day 2·53 g. of antitoxin were injected, and afterwards doses of 0·6 g. were given at regular intervals. At first the condition became worse, but soon the symptoms subsided, and on the sixteenth day after the first injection, the symptoms ceased. The quantity of antitoxin administered was 4·05 g.

A severe case of tetanus, successfully treated by subcutaneous injections of corrosive sublimate, is reported by Celli.[3] The case was one of a neglected wound in the foot of a six-year-old child. The wound was thoroughly disinfected, rectal injections of chloral and opium were administered, and the subcutaneous injections of **Corrosive Sublimate** in 0·0059 g. doses were given. After the second injection, amelioration in the symptoms were noted, and after the ninth injection they subsided. The injections were administered every twelve hours.

REFERENCES.—[1] "Practitioner," vol. liv., No. 4; [2] "Wien. klin. Woch.," Nov. 25, 1894; [3] "Arch. Ital. di Pediat.," 1894.

THROAT (Foreign Bodies in the Upper Air and Food Passages).

P. Watson Williams, M.D., Bristol.

Felix Semon[1] draws attention to some points of practical importance, and lays down valuable rules for dealing with these cases. In the first place, he remarks, that in the majority of patients who have consulted him for impaction of foreign bodies in these regions, the foreign body is no longer present, there being only the after sensation of soreness left behind. On the other hand it is necessary to avoid the mistake of asserting that the foreign body has been dislodged when it is still there, and the chagrin of hearing that some other practitioner has removed it subsequently. Thus, in all cases, a most careful examination must be made, both by inspection and palpation. Do not commence by palpation, or a sharp pointed body (for instance, fish bones, needles, etc.), that is almost buried, *e.g.*, in the tonsil, may be driven further in, so that the only projecting portion is buried, and thus subsequent attempts at removal may be frustrated. For the same reason, if it is desirable to allay the irritation and pain by cocaine it should be applied by a spray, not by a brush.

Begin by examining the whole region in a good light, and make the inspection thoroughly and methodically. This inspection must not be limited to the region where the patient suspects the body to be lodged, as the power of localization in the throat is very defective; the sensations in the most different parts of the organs of the neck, are, as a rule, jointly referred to the laryngo-tracheal region. Thus a partridge bone, lodged in the naso-pharynx, gave the most definite sensation of being lodged in the larynx. Particular care must be exercised in looking for fish bones; when deeply impacted in the tissues, so that only a small part projects, it is sometimes extremely difficult to discover it, the more so as strings of tenacious saliva, which extend from one part of the throat to the other, often closely simulate it.

As regards treatment, Semon lays down two principles :—

(1,) No foreign body, the presence of which has been actually detected, ought to be allowed to remain impacted, even if at the time it does not produce any serious symptoms.

(2,) No attempt should ever be made to ram an angular or pointed foreign body forcibly down.

Regarding the first point, he remarks that bodies which cause no serious symptoms at the time may subsequently set up perichondritis if in the larynx, or becoming dislodged, may fall into the trachea. If in the œsophagus it may cause ulceration and perforation, or lead to the formation of a pouch.

I have recently seen a case in consultation where a half-sovereign had remained impacted in the larynx for a fortnight, at the end of which time it caused ulceration with such severe hæmorrhage that the patient was rendered very anæmic (W.W.).

The second proposition laid down by Semon, while self-evident, cannot be too strongly insisted upon, as cases in which severe accidents have occurred from neglect of this fundamental rule are by no means unknown. Foreign bodies may generally be removed by forceps. When a body has passed into the trachea or bronchus, it is as well to try inversion and forcible shaking. This failing, tracheotomy should be performed, and the patient may then cough it up, or its expulsion may be aided by inversion. In some cases it may be possible to pass long, narrow forceps down through the tracheotomy wound to seize the foreign body.

Of course extraordinary cases require the adoption of special methods of extraction, and in the case of the œsophagus it may be necessary to perform œsophagotomy. Only when it is quite certain that the body is smooth and rounded is it justifiable to push it down into the stomach by means of a probang.

When the foreign body has passed into a bronchus, tracheotomy should be performed, not to relieve dyspnœa, but to facilitate the expulsion of the body, should it be coughed up, as the spasm of the glottis, induced by its presence in the trachea, generally prevents its expulsion, and may asphyxiate the patient. A good illustration of the benefit of this procedure is reported by Carslaw.[2]

REFERENCES. — [1] "Med. Chron.," April, 1895; [2] "Glasg. Med. Journ.," April, 1895.

TONSILLITIS (Acute). *P. Watson Williams, M.D. (Bristol).*

A discussion on the infectious nature of *acute lacunar* tonsillitis at the annual meeting of the British Medical Association in London, 1895, was opened by Prof. Fränkel and J. Macintyre. Fränkel remarked that the clinical course of the affection, together with the outpouring of innumerable leucocytes from the tonsil into the crypts, and amongst which numerous micro-organisms could be demonstrated, pointed strongly to the hypothesis that the disease was an infectious fever, this view being further supported by the swelling of the spleen in a fraction of all cases. He referred to the frequency with which acute tonsillitis followed intra-nasal operations, especially when the galvano-cautery was used, running precisely the same course as the spontaneous varieties, and associated with the same micro-organisms. This seemed to prove that the operation on the nose afforded a means of entrance for the infecting microbes, which reached the tonsil by the lymphatic channels. Cold and chills probably acted in a similar manner by lowering the resistance of tissues, so that the organisms gain entrance and are conveyed to the tonsillar tissue. This he believes is more probable than that the organisms advance from without through the epithelium of the crypt against the leucocytes and the direction of the lymph stream. Fränkel has for several years advocated the infectious nature of tonsillitis, and was justified in assuming that there was no longer room for doubt on this point. Macintyre stated that he was inclined to cast in his lot with those who hold both clinically and from bacteriological observation that we are dealing with an infection which is not only auto-infectious, but capable of transmission from one subject to another, and that the clinical evidences of this are not confined to the local symptoms and signs at the seat of infection. He has found, like many others, that we sometimes have evidence of secondary infection of the respiratory and gastro-intestinal tract, that secondary mischief may be detected in the glands of the neck and mediastinum, of the presence of albuminuria, alteration of the cardiac sounds, enlargement of the spleen, skin erup-

tions, pleurisy, pneumonia, and irritation of such distant organs as the testes and ovaries, all accompanied by distinct alterations in temperature, prostration, and general manifestations of the presence of a severe constitutional fever. He showed photographs where even Peyer's patches were involved. During the process of the disease it is easy to satisfy oneself that various forms of cocci, strepto-cocci, and particularly staphylo-cocci, and less often diplo-cocci are present in great abundance, while Fränkel has found pneumo-cocci. Yet so many micro-organisms are present in the normal mouth and tonsillar crypts that it is very difficult to definitely *demonstrate* that such organisms as are mentioned above are the actual and essential factors in acute lacunar tonsillitis. Variot[1] reports an instance of three members of a family who contracted in turn from a child *angina à streptocoque.* Wagner[2] of San Francisco, adduces evidence showing that rheumatism is due to migration of the germs present in lacunar tonsillitis. He has found the same micro-organisms in the synovial fluid of the knee-joint in two instances, and in the urine of nearly all his cases, as existed in their diseased tonsils, while the family and clinical histories of the patients were free from taint of rheumatism before the attack of tonsillar disease.

Sendziak has written a very able paper on follicular angina and its relation to diphtheria,[3] in which, after entering fully into the whole question of etiology, pathology, etc., he says, "The diagnosis of lacunar tonsillitis is generally easy, the acute disease, with fever, with characteristic affection of the tonsils (white, yellow, grey points in the crypts) can be only confused with true diphtheria. This latter differs, however, in a simultaneous affection of the other parts of the pharynx (uvula, palatum molle, etc.); the membranes themselves are more diffuse and not absolutely localized in the crypts, in the form of more or less thick, greyish, or dirty pseudo-membranes. The affection of the nose, naso-pharynx or larynx in certain cases, and further, the course of the disease (secondary paralysis, etc.) permit us to distinguish these conditions. The general symptoms, the affections of the lymphatic glands of the neck, and the infectious character do not have any distinctive significance, because they can appear in cases of both these diseases. Although the typical appearances of the tonsils do not generally leave us in doubt as to the nature of the case, yet in a typical case the membranes, though localised in the crypts, are more diffuse. The diagnosis in these cases can only be solved by means of bacteriological investigations; they may yield in culture the pseudo-diphtheritic bacilli. Massei's[4] remarks on clinical differences between various forms of *membranous angina* will often be useful, especially

when bacteriological examination is unobtainable. He states that if you find the patient cannot open the mouth you may almost invariably exclude diphtheria, and suspect one of the inflammatory non-diphtheritic forms of angina. If the affection is a single manifestation, without any erythematous or papular eruption, suspect diphtheria; if on the second, third, or fourth day of scarlet fever the angina is probably coccogenic and not bacillary. In the presence of a yellowish-white, easily separable membrane, affecting chiefly the tonsil, one should suspect staphylo-cocci alone or in conjunction with strepto-cocci. If the exudation is thicker, more compact, greyish-white, and developed not only on the tonsil but on the uvula as well, or if the membrane is surrounded by a well marked hyperæmic zone, it is probably of streptococcal origin. If the exudation is very white, compact, and dense, it is probably due to pneumo-cocci; if the pseudo-membrane has the character of a fixed, dense tissue, more or less thick, it is most likely due to staphylo-cocci alone.

Pseudo-diphtheritic angina is very completely discussed by Bourges[5] in a special monograph. He affirms that diphtheroid angina is certainly contagious. Epidemics on a smaller scale have occurred, and he states that he has recently brought forward undoubted evidence of its transmissibility.[6] He says that the frequency of this disease is considerable, for it is now generally admitted in children's hospitals that only three out of every four cases of pseudo-membranous angina are true diphtheria. Bourges classifies cases of diphtheroid angina as follows :—

(1,) Primary: (*a*,) *Herpetic*, a vesicular inflammation, giving ultimately rise to small pseudo-membranous discs, confluent or discrete (Peter); (*b*,) *Other forms*, which closely resemble diphtheria in clinical aspects, and which can only be differentiated from the latter by bacteriological examination.

(2,) Secondary in (*a*,) small-pox, (*b*,) measles, (*c*,) scarlatina. In this there are three forms, the mild, the grave (constantly giving rise to complications, *e.g.*, broncho-pneumonia, rheumatism, nephritis, buboes, otitis, impetigo), and septic; (*d*,) syphilis. He goes on to say that cases of non-diphtheritic pseudo-membranous laryngitis are of more frequent occurrence than is generally supposed; thus in eighty-eight cases of croup examined histologically by Martin,[7] he found twenty-nine which were not truly diphtheritic, their false membranes only containing streptococci or cocci. The microbes may extend to the nose or middle ear, or by the lymphatics may reach the sub-maxillary or sterno-mastoid region, or may cause retropharyngeal abscess, and cases are on record in which symptoms of acute nephritis

have followed diphtheroid angina, while arthralgia may occur in the the knees, wrists, etc., not yielding to salicylates, while even suppurating arthritis has been observed.

Bacillus coli tonsillitis is recorded by Lermoyez.[8] It was characterized by resistance to all ordinary methods of treatment, and by the chronic nature of the tonsillitic lesions following the initial acute stage and recalling in a most striking manner those of pharyngomycosis. Watson Williams has observed a case in which the tonsil sloughed away bodily in three or four days. The bacteriological examination by Dowson showed the presence of a large bacillus, disposed in pairs, giving the impression that it was one of the many putrefactive forms found in sewage and filth collections. This case was undoubtedly contracted from sewage exhalations. Further reference to these important questions may be made to J. O. Symes'[9] "Notes on the bacteriology of the throat in some infectious fevers," and Tessier's[10] "Pseudo-membranous sore throat due to oidium albicans." Extremely interesting observations on "Infectious sore throat" are recorded by J. C. Thresh,[11] who also records pseudo-diphtheria due to oidium torulæ. He covers much the same ground as the writers already quoted.

Paralysis following tonsillitis.—It is now admitted that paralysis similar to that following diphtheria may arise after other forms of sore throat, and a case in support of this statement is reported by Bourges.[12] A boy aged seven suffered for seventeen days from pseudo-membranous angina without albuminuria. Sixteen days after the membranes had disappeared he presented convergent strabismus, two days later the voice was nasal, and he coughed on swallowing liquids. Three days after this he was unable to stand up, although able to move his legs in bed. The paralysis remained incomplete, without sensory disturbances of muscular atrophy, but knee jerks had disappeared. The strabismus lasted a fortnight, and inability to stand, a month. Only strepto-cocci, cocci, and small bacilli stained by Gram's method were found after careful examination. The mother who nursed the boy developed similarly pseudo-angina, containing streptococci only. In his above mentioned monograph Bourges states that Gubler strenuously maintained that paralysis may follow a non-diphtheritic angina (velum palati, ocular muscles, or limbs), that Germain Sée shares this view, and that Landouzy admits that simple angina, being a constitutional disease like typhoid and eruptive fevers, is capable of determining paralysis. Finally, as it is evident that the pseudo-membranous anginas are the outcome of a large variety of micro-organisms it would be a great convenience if a short term could

be applied to that form which is due to or associated with the presence of the Löffler bacillus, the reporter (W. W.) would venture to suggest the name "*Löffleria*" for this purpose. (See "Diphtheria," p. 237.)

TREATMENT.—For simple acute lacunar tonsillitis the reporter (W. W.) has found that no remedy acts so surely and so rapidly in relieving the local and general disturbance as the **Salicylate of Sodium** given as follows :—

℞ Sod. Salicylat.	grs. xv.	Liq. Strychniæ	♏j
Liq. Quininæ Salicylat.	(= āā grs. j) ʒj	Tinct. Aurant.	♏v
Tinct. Digital.	♏ij	Aq. dest.	ad. ʒj

Sig.—Give every hour for three hours, then every four hours.

The bowels should be kept freely moved. Locally, ice may be sucked, and a spray of Boroglyceride ʒj, Cocaine Hyd. gr. v., Glycerine ʒj, Water to ʒj, should be used at frequent intervals. He has also found painting the affected areas with pure **Gualacol** (as recommended by Raymond), or spraying the fauces with a solution of **Izal**, 1 in 200, effectual in shortening the attack.

Sendziak[13] gives **Oleum Ricini, Antipyrin, Quinine,** or **Salol** and **Wine**, while locally he relies on gargling with 5 per cent. salol (alcoholic solution), ʒj to ʒij lukewarm water, or menthol, and very seldom sublimate or creolin. In slighter cases boric acid was prescribed. Very good results, especially in the alleviation of pain, are obtained by the application of the so-called *compresse échauffant* over the neck, especially in cases complicated with affection of the lingual tonsil. In those rare cases where simultaneously the pharyngeal tonsil is affected, he applies insufflation of **Aristol,** as well as nasal douches with **Boric Acid**.

In acute ulcerated tonsillitis, E. J. Moure[14] first cleanses the ulcerated patch, by scrubbing with a cotton wool holder, with a solution of **Chloride of Zinc** (1 in 20 to 1 in 30) thus :—

Hydrochlorate of Cocaine	30 to 50 centigrammes	Hydrochloric Acid	½ a drop
		Pure Glycerine	10 grammes
Chloride of Zinc	1 gramme	Distilled Water	15 to 20 grammes

This being done, the patient should gargle several times a day with a spirituous solution (a gargle of boric acid and bromide, sweetened with neutralized glycerine). Next day the throat should be brushed with chloride of zinc or with the ordinary solution of iodide, and iodine and carbolic acid. Simple carbolised glycerine (1 in 10 or 15) is also excellent. As the ulcer becomes clean the alcoholic gargle takes the place of the brushings. In these cases a cure is generally effected within a few days.

In the treatment of pseudo-diptheritic angina, Bourges [15] lays down the principle that it should be directed towards alleviating the pain, combating the infection by irrigation and antiseptic applications to the throat, and by general therapeutics for insuring intestinal antisepsis, so as to prevent intoxication of the digestive tract. Locally, emollient gargles used as hot as the patient can bear ; astringent gargles or mouth washes prepared with alum, biborate of sodium, or chlorate of potassium, and the application of 5 per cent. menthol oil. When there is extreme dysphagia, the throat should be painted with 3 per cent. cocaine or 5 per cent. morphine, or hot poultices or icebags may be applied permanently on the sides of the neck. Whatever medication be adopted, however, the throat should be washed out thoroughly four or five times a day with warm antiseptic solution (salicylic or carbolic acid, 1 in 1,000, or boracic acid 3 per cent.), rendered more agreeable by the addition of peppermint or lemon juice. The nasal cavities should be irrigated in the same way. Care must be taken not to unduly prolong the disease by the use of antiseptic mouth washes, when the inflammation of the throat is very marked ; in such cases it is better to merely paint the throat with an alcoholic solution of salicylic acid in glycerine (5 per cent.).

Constitutional treatment consists in ensuring intestinal antisepsis by **Benzo-naphthol** (1½ to 2 grammes daily), or **Salol** (4 grammes a day). In the case of the latter drug carboluria, when it occurs, is a sign to be watched for, and requiring suspension of the drug. The exhibition of **Quinine** is also recommended.

REFERENCES.—[1] "Rev. Mens. des Mal. de l'Enf.," Sept., 1894, "Amer. Journ. of Med. Sci.," Nov., 1894 ; [2] "New York Med. Journ., 1894, No, 830 ; [3] "Journ. of Laryng.," 1895, p. 267 and 347 ; [4] "Rif. Med.," Jan. 21 and 22, 1895, "Brit. Med. Journ.," Epit., March 2, 1895 ; [5] "Med. Week," Sept. 6, 1895 ; [6] "Arch. de Med. exper. et d'anat. path.," Jan., 1895 ; [7] "Ann. de l'Institut. Pasteur," July, 1890; [8] "Med. Week," June 29, 1894 ; [9] "Lancet," Aug. 24, 1895 ; [10] Arch. de Méd. exper.," March, 1895 ; [11] "Lancet," Aug. 17, 1895 ; [12] "Med. Week," Dec., 1894 ; [13] Loc. cit. ; [14] Loc. cit. ; [15] Loc. cit.

TONSILS (Tuberculosis of the).

P. Watson Williams, M.D., Bristol.

The Tonsils as a Means of Entrance for Pathogenic Organisms.—The precise functions of the tonsils are, as yet, somewhat obscure, but at least it is certain that numerous leucocytes (phagocytes) pass out from the adenoid tissue, between the epithelium cells of the surface, into the crypts and thence find their way into the pharynx, together with mucus from the mucous glands of the tonsil. It is believed that these free leucocytes play an important part in seizing

on and destroying many of the micro-organisms introduced with food and air, and thus exercise protective functions. The structure and functions of other collections of lymphoid tissue of the fauces and naso-pharynx are identical, and thus it is convenient to include the faucial naso-pharyngeal and lingual tonsils in the present consideration. Strauss, Chauveau, Krückmann and Sims Woodhead have laid stress on the frequency with which the cervical glands and other lymph-tracts become infected by tubercle bacilli which have entered through the tonsils, while Semon has found evidence that the infecting micro-organisms in septic inflammation of the pharynx gain entrance through these open portals.

Krückmann,[1] from post-mortem examination of twenty-five tubercular cases, found that in twelve there was tuberculosis of the tonsils, and in every case in which the cervical glands were affected, the tonsils were tubercular. In two cases there seemed no room for doubt that the tonsillar lesion was the primary tubercular lesion of the body, and in 60 per cent. of the cases of pulmonary tuberculosis, similar inflammation of the tonsils was present.

Lermoyez[2] has shown that there are two kinds of tuberculosis affecting adenoid vegetations of the nasal cavities and pharynx, one of which is easily recognized clinically by its anatomical characters, such as ulcerated tubercles, etc., while the other is masked and can only be discovered by microscopical examination. Dieulafoy,[3] in a paper on masked tuberculosis of the three tonsils, states that with regard to the pharyngeal tonsil, tuberculous lesions of this tissue resemble those described under the name of adenoid vegetations, while tuberculous lesions of the palatine tonsils are confounded with simple hypertrophy. He inoculated guinea-pigs with fragments of the tonsil, or adenoid vegetations from various patients. Of sixty-one animals inoculated with fragments of the tonsils, eight, or 13 per cent., developed general tuberculosis; of thirty-five inoculated with adenoid vegetation, seven, or 20 per cent., became tuberculous. He says that it is thus established, both clinically and experimentally, that in many cases, hypertrophy of the tonsils and adenoid vegetations are nothing but masked forms of tuberculosis, and he notes particularly that in all subjects from whom pieces of the tonsils or adenoids were removed for his experiments, the tuberculosis there was primary and not consecutive to pulmonary tuberculosis. The entrance of the tubercle bacilli into the lymphoid tissue of the tonsils constitutes the first stage. In many cases there is no second stage, the phagocytic reaction gaining the upper hand after a few months or years, the tonsillary tissue becoming fibroid and hard, and

the process ending in recovery, without generalised infiltration. In other instances, however, having remained in the tonsil for a time, the bacillus enters the lymphatics, determining cervical and submaxillary adenopathy. The arrival of the bacillus in the lungs, he says, constitutes the third stage; after passing from gland to gland, and from reticulum to reticulum, the microbe ultimately reaches the great lymphatic vein or the thoracic duct, and is carried away in the venous circulation, whence it passes into the right heart and finally into the lungs. Dieulafoy remarks that there is no direct relationship between enlargement of the tonsil and cervical adenopathy; very often these conditions are in inverse ratio. Cornil[4] has criticised the observations of Dieulafoy, remarking that in his experience: (1,) Histological examination (in most instances under his own supervision) of adenoid vegetations, from seventy cases, showed evidence of tuberculosis in only four, and that in no single instance after the histological examination of a very large number of hypertrophied tonsils has he observed giant cells or any other evidence of tuberculosis; (2,) He considered that Dieulafoy's inoculations were subject to the fallacy that the tubercle bacilli, entering by the mouth or nose might simply be entangled in the mucus lying in the crypts or irregularities of surface, with the tonsils being really infected with tubercles. Purves Stewart[5] found that enlarged tonsils removed from a child, aged ten (who was the subject of chronic hypertrophy of the tonsils, adenoids, cervical glands, and post-scarlatinal otorrhœa), showed, on microscopical examinations, large numbers of multinucleated giant cells, characteristic of tubercle, surrounded by the usual epithelioid and lymphoid cells, but no bacilli were discovered, though the enlarged cervical glands contained abundance of tubercle bacilli. Chauveau, in discussing Dieulafoy's paper, said that he had never succeeded in producing general tuberculosis in the cow by subcutaneous inoculation, but in the calf buccal infection produces rapid general infection.

TREATMENT.—Dieulafoy advocates reliance mainly on the introduction of much **Fat** into the diet (cod-liver oil, sardines, butter), and on **Sea Air**. At the Marine Hospital, at Berck, enlargement of the cervical and submaxillary lymphatic gland disappeared in nine hundred out of one thousand two hundred and ninety-three cases treated. But he found that although a residence of fifteen months at Berck gave 76 per cent. recovery, with a residence of only three months the percentage of cures fell to 41 per cent.

The Tonsils and Septic Inflammations.—Buschke[6] describes several cases in which he believes pyogenic micro-organisms gained entrance

to the system through the tonsil. Bacteriological examination showed the presence of streptococci and staphylococci in the crypts of the tonsils, and in the blood, as well as in the suppurating focus. He is of opinion that : (1,) The tonsils, without being ulcerated or inflamed, may be the points of entrance for pyogenic micro-organisms ; (2,) On the basis of experimental investigations, the tonsils play an important *rôle* as the means of entrance for pus-producing micro-organisms.

Semon,[7] in a powerful article, sets forth his reasons for believing in the probable pathological identity of the various forms of acute septic inflammations of the throat, hitherto described as acute œdema of the larynx, œdematous laryngitis, erysipelas of the pharynx and larynx, phlegmon of the pharynx and larynx, and angina Ludovici, and that they merely represent degrees varying in virulence of one and the same process. He believes that the question of their primary localization and subsequent development depend upon accidental breaches of the protective surface through which the pathogenic micro-organisms found an entrance, and that it is impossible to draw at any point a definite line of demarcation, clinically, between the purely local and the more complicated, or between the œdematous and the purulent forms ; various pathogenic organisms may be producing identical lesions. Kanthack states that the present state of pathological knowledge supports Semon's views.

Ludwig's angina is the subject of a paper by Newcomb[8], who remarks that Heim had noticed this condition thirteen years before Ludwig gave as the characteristic local features the following : (1,) A peculiar wooden-like induration of the connective tissue which would not pit on pressure ; (2,) A uniform spread of this induration in such a way that it is always sharply bordered by a zone of entirely unaffected cellular tissue ; (3,) A hard swelling under the tongue with a bolster-like swelling around the interior of the lower jaw of a deep red or bluish-red colour—all lesions of the teeth, glands of the mouth, herpetic ulceration of the lips, eruptions of the wisdom teeth, and tonsillitis, all predisposing causes, as they favour the entrance of the virulent germs into the lymphatics. The local symptoms are those of a phlegmon ; a differential diagnosis must be made from osteomyelitis of the jaw, simple submaxillary adeno-phlegmon, and Fleischman's hygroma. Only one hundred cases are on record. Of fifty-eight reported in detail, forty-four were males, nine females, and five infants ; ages varying between sixty-six years and three months. Twenty-five of the fifty-eight died. In nine, bacteriological findings are recorded, viz., streptococci pyogenes, four ; staphylococci pyo-

genes albus and aureus, each one ; and cocci of erysipelas, two ; in one the microbe was longer and narrower than the B. coli.

Treatment is summed up in early incision, subsequent rigid antisepsis, and general supportive measures.

REFERENCES.—[1]"Virch. Archiv.," 1894, cxxxviii ; [2]"Med. Week.," 1894, p. 355 ; [3]"Ibid., May 3, 1895, and May 10, 1895, "Brit. Med. Journ.," June 1, 1895 ; [4]Ibid. ; [5]Ibid., May 4, 1895 ; [6]"Deut. Zeit. f. Chir.," xxxviii, Heft. 4-5, "Amer. Journ. of Med. Sci.," Nov. 7, 1894 ; [7]"Med. Chir. Trans.," vol. lxxviii. ; [8]"New York Med. Record," July 20, 1895.

TORTICOLLIS (Spasmodic). (See also "Wry Neck.")

Synopsis.—(Vol. 1895, p. 480.) Sinkler obtained excellent results with large doses of Conium after failure of counter-irritation, galvanism, actual cautery, nerve stretching, etc.

TUBERCLE (Surgical Treatment of).

Synopsis.—(Vol. 1895, p. 481.) Lane advises clearing of all abscess cavities around joints, etc., and injecting Precipitated Sulphur, emulsifying with Glycerine into a cream. Bier's method of inducing venous congestion is said to deserve further trial.

TUBERCULOSIS (Pulmonary).

R. Shingleton Smith, M.D., B.Sc., F.R.C.P.

ETIOLOGY.—When one comes to consider the *tuberculous individual*, it is essential to bear in mind that two things are needed to set in action the tubercular process. There must be the seed, and there must be a suitable soil. The seed is provided by the tubercle bacillus, and among the haunts of men this bacillus is, without doubt, liberally distributed. The more closely human beings are packed together, the more common may the bacillus be expected to be. In spite of the very general diffusion of the bacterium in our midst, it is remarkable that tuberculosis, although a common enough affection, is by no means common to all men.

In the "Med. Chronicle" (Oct., 1895), Treves says : "It is evident that the soil is of much more importance than the seed—that there must be a large proportion of a population who are practically non-inoculable, while there is a proportion whose bodies form a suitable medium in which the bacillus can grow. Tuberculous disease may be acquired, but it cannot be inherited."

Sir James Paget[1] remarks that the theory of the transmission of tubercle to the offspring through the ovum is not generally accepted. Many believe it to be more probable that the parent transmits simply a constitutional delicacy or some peculiarity of the pulmonary tissue which renders the individual more liable to become the subject of bacillary infection ; but it cannot be said that we have any certain

information on the subject. Squire[2] suggested that the frequency of this disease in members of the same family was, at any rate, in part due to the conditions of life and environment, and not necessarily to heredity. He did not wish to disprove the existence of heredity as a factor in the causation of phthisis, but to modify the received impression as to its preponderating influence. He gave an analysis of one thousand cases of phthisis, with special reference to the proportion of cases in which apparent heredity was found. The result of the inquiry tended to show that the influence of heredity could not be put higher than 9 per cent. of cases amongst the children of phthisical parents in excess of the cases occurring amongst the children of non-phthisical parents. It was argued that the hereditary influence in phthisis was not a true heredity, but a tendency to suffer from disease—tuberculosis amongst other complaints —which the offspring of consumptives had in common with the children of weakly parents from whatever cause this delicacy might arise.

On the other hand, J. E. Pollock[3] referred to R. E. Thompson's statistics, which showed that 38 per cent. of the observed cases of phthisis had parental phthisis preceding them. He did not consider phthisis contagious in the ordinary sense of the term, and instanced the rarity with which it developed among the medical officers and nurses of the Brompton Hospital for consumption. Heredity not only transmitted phthisis, but it transmitted definite forms, such as the fibroid or the hæmoptoic ; in some cases as a result of this transmitted taint, members of different generations in a family died off at the same age. If both parents died of phthisis, the offspring would die not only at an earlier date, but from a more acute type of the disease. All his experience of forty years' practice pointed to heredity being the most important factor in the causation of phthisis.

It was remarked by Kingston Fowler that the general tone of the discussion (which followed on Squire's paper above mentioned) clearly showed a tendency to ignore the importance of the hereditary factor, and to insist upon infection as the only point worthy of consideration, but he held that it would be a grave error for the profession to be led by the fascination of this element of the problem to cast aside the experience derived from centuries of observation.

Baumgarten's view (quoted by Hansen and Looft[4]) is that both tuberculosis and leprosy are distinctly transmissible.

As a matter of fact we know of no specific disease which can be called hereditary. The conditions which are hereditary are all anatomical and physiological peculiarities of the organism. A

bacillus, which is living in the organism, cannot be regarded as one of its anatomical or physiological peculiarities : it is a parasite. Now it is beyond doubt that parasites may be conveyed from parents to children. Such are the Achorion Schönleinii, and the Acarus Scabiei. But this is no hereditary communication, it is simply a present from the parent to his child. But, it is objected, if the parasite be conveyed through the organs of generation during copulation, then it is no longer a present or an inoculation, it becomes hereditary. It is accordingly held by the authors that a specific disease may be conveyed to the children, but that it is never hereditary : the communication is by infection.

The influence of heredity upon the progress of phthisis has been investigated by S. E. Solly[5], Colorado Springs, whose cases were all treated at an altitude of six thousand feet under personal observation. From a careful study of two hundred and fifty cases, extended over a period of sixteen years, he points out three ways in which the family may effect the development of phthisis, viz : (1,) By direct transmission of the bacilli in procreation ; (2,) By inheritance of a physique peculiarly susceptible to phthisis ; (3,) By contagion from living with consumptive relatives or in their dwellings After giving most important details under these headings, he pleads for the recognition of heredity as of considerable importance in diagnosis, prognosis, and treatment.

Nocard[6], in his "Animal Tuberculosis," demonstrates contagion in bovine tubercle, and Scurfield. in his translation (1895), observes that if the children of tuberculous parents were protected from infection by cohabitation or ingestion, the importance of heredity as a cause of the disease would dwindle away into insignificance.

One of the unusual channels of infection in tuberculosis has been investigated by Sims Woodhead[7], who describes the *rôle* played by the tonsil in preventing or facilitating infection. In certain animals and in man (dirty or mixed feeders) there was, he said, a ring of lymphoid tissue surrounding the entrance to the larynx, and a similar ring surrounding the entrance to the œsophagus. The pharyngeal tonsil was a great local development of the two poles of the latter ring. So long as all this lymphoid tissue remained healthy, or was not attacked by an extraordinary number of micro-organisms, it was capable, with the assistance of the epithelium, of dealing with even virulent micro-organisms. But, if overstrained, the lymphoid tissue itself might become the seat of tuberculous disease, or be so disorganised that it allowed the tubercle bacillus to pass into the glands surrounding and immediately

connected with them. This method of entrance of tuberculous infection, which had first been worked out in the case of the pig, was probably of comparatively frequent occurrence in children living under insanitary conditions. The very cells which in health destroyed the bacilli—the lymphoid cells—were those which, when the function of the lymphoid tissue was lowered, were responsible for conveying the bacilli from the outer surface to the deeper structures. In children the tuberculous process, started in this way, might extend at first entirely through the lymphatics, the lungs escaping until the glands at their root, or in the pleura, had become distinctly affected. In early life also, the primary seat of infection was very frequently in the alimentary tract. The importance of this mode of infection was, in Dr. Woodhead's opinion, not yet fully appreciated.

The final conclusion of the Royal Commissioners[8] on Tuberculosis is as follows: "Ordinary processes of cooking applied to meat, which has got contaminated on its surface, are probably sufficient to destroy the harmful quality. They would not avail to render wholesome any piece of meat that contained tuberculous matter in its deeper parts. In regard to milk, we are aware of the preference by English people for drinking cow's milk raw, a practice attended by danger, on account of possible contamination by pathogenic organisms. The boiling of milk, even for a moment, would probably be sufficient to remove the very dangerous quality of tuberculous milk."

The necessity for the disinfection of tubercle-infected houses has been emphasised by Sheridan Delépine and A. Ransome.[9] The authors sum up the results of their long continued and extensive enquiry :—

(1,) The disinfection of rooms which have been contaminated with tuberculous products, cannot be obtained by means of the fumigation methods, such as are generally used at present. Sulphurous acid, chlorine, and euchlorine, as used under supervision of experienced municipal disinfectors, have proved practically useless. This only confirms the results obtained by Koch and his pupils in the case of a number of other organisms.

(2,) The only other method of disinfection which seemed to promise more satisfactory results, was the direct application of a solution of chlorinated lime to the walls to be disinfected. This method has given so far, satisfactory results, but is attended with discomfort on the part of those who have to carry out the disinfection.

(3,) Light is, in the case of the tubercle bacillus, as it has been proved by several observers to be in the case of other organisms, the most important natural disinfecting agent.

To lessen the mortality from consumption, William Murrell[10]

maintains that there must be combined legislative action and personal effort.

In the first category we aim at :—

(1,) The ultimate inclusion—when public opinion is ripe for that step—of consumption in the list of notifiable diseases.

(2,) Public and official announcement of the fact that, in the event of a person having died of comsumption, the rooms occupied by him will be disinfected by the Sanitary Authorities free of charge. The facilities for disinfection should extend to any dwelling which has been vacated by a consumptive person, and should be enforced in the case of hotels and lodgings at health resorts frequented by sufferers from chest diseases.

(3,) The passing of an Act making it illegal to let any house or room in which any person, within two months, has suffered from consumption without having had it properly disinfected.

(4,) To make it an offence punishable by fine or imprisonment for any person letting a house or room to wilfully conceal or deny that there has been consumption in the house.

(5,) To call the attention of shipping agents to the fact that there is danger to a healthy person in occupying the same cabin with a consumptive, especially on long voyages, and when, from the inclemency of the weather, the passengers are not much on deck.

(6,) To make it compulsory for a consumptive person taking a long voyage by sea to notify the nature of his complaint before starting.

(7,) To call the attention of railway companies, on lines connected with well known health resorts for consumptives, to the necessity for having the sleeping carriages carefully cleaned with some disinfecting solution, and above all, thoroughly aired.

(8,) The removal of hospitals for consumption from London and other large towns to some convenient and open suburb. The out-patient department might, for convenience, be retained in town, but there should be no in-patients. Hospital omnibuses might ply from certain fixed points to the hospital and back, and should not be available for the general public.

(9,) The exercise of greater care in the inspection of carcases intended for food, and the compulsory rejection of those exhibiting indications of the tubercular disease.

(10,) The rejection, as an article of fluid, of the milk of tubercular cows.

(11,) The inspection of herds by paid officials, with the view of detecting tubercular disease, and isolating or destroying tubercular animals.

(12,) The prevention of overcrowding amongst animals intended for consumption as food.

(13,) The prevention of overcrowding amongst people, by regulating the amount of cubic space allotted to each person in common lodging-houses, workshops, etc.

(14,) The extension of wash-houses, and the establishment of places where certain trades, such as tailoring and boot-making, could be carried on by the payment of a small fee.

(15,) Back to back houses should be condemned, and the height of houses in cities should be in proportion to the width of the streets.

(16,) Blind alleys should be opened out, and the custom of building houses at right angles to the length of the streets, should be forbidden.

(17,) Dusty occupations should be strictly regulated, so as to minimize the danger to those who are compelled to follow them.

(18,) Convents, and other religious communities, should be periodically inspected by some independent authority, with the view of ascertaining the general condition of health of the inmates, and suggesting such sanitary and other measures as may seem necessary.

In the second category the following points are of importance :—

(1,) No one should consent to sleep in the same room with a person suffering from advanced phthisis, especially when the expectoration is abundant.

(2,) The temperature of the room occupied by a consumptive person should not be too high, especially when he is confined to bed, and efficient ventilation should be secured, preferably by means of open windows.

(3,) The patient should expectorate into a spittoon containing the Local Government Board solution, or some other equally good disinfectant. The expectorated matter should be destroyed by mixing it with fine coal, and burning it in the fire.

(4,) The pocket-handkerchief used by the patient should be thrown into a bucket containing the Local Government Board solution, and should be scalded before being sent to the wash. Instead of the ordinary handkerchief, a paper substitute, or pieces of rag, may be used, and these should be burnt.

(5,) It should be remembered that the risk of conveying the disease from the sick husband to the healthy wife, who nurses him, is great.

(6,) The wife who nurses a husband suffering from consumption, should get out in the fresh air as much as possible, and should do all in her power to maintain the condition of her own health.

(7,) Wind instruments, and other similar articles which have been used by a consumptive person, had better be destroyed when no longer required by him, and should certainly not be used by healthy people without previous disinfection.

(8,) Never travel on board ship in the same cabin with a consumptive person. Apply to the surgeon for another berth, or for an order to have the sick person removed to the ship's hospital.

(9,) Food should be well cooked, not only superficially, but throughout.

(10,) In the case of tubercular children, or of people predisposed to phthisis, it is a good plan to boil all milk previous to use.

(11,) People predisposed to phthisis should select as a place of residence a house on a gravel soil, preferably on a slope and facing south.

(12,) Those predisposed to phthisis should select non-sedentary occupations, and should be encouraged to spend as much time as possible in the open air, and above all, in direct sunlight.

(13,) People should be taught to value the importance of amusements of all kinds, and to recognize the danger of leading monotonous and depressing lives.

(14,) The children of phthisical parents should devote much time to athletic exercises, and should not be allowed to follow sedentary occupations.

(15,) They should be encouraged to migrate, and not to live in the house which their parents occupied.

The effects of alcoholic beverages, and their predisposing influence in respect of tuberculosis, have been described by Lancereaux,[11] who remarks that the influence of alcoholic beverages in tuberculosis is unquestionable. Drunkards' phthisis, as a matter of fact, is characteristic, both with regard to its localization and its evolution ; it being localised at the right apex and behind instead of at the left apex anteriorly, and the mischief usually relaxes after a first attack, which is sometimes accompanied by hæmoptysis, after which, if the inebriate had the good sense to change his habits, he would generally recover.

TREATMENT. — Karl Von Ruck,[12] continues to be the most ardent advocate for a continued use of **Tuberculin.** He states that the unexpected toxic effects in the human subject at once limited its use, and persistence in the use of large and evidently poisonous doses brought the remedy into discredit. For three years and a half, the author continued to employ tuberculin, and has had every reason to be satisfied with the results in over twenty thousand injections.

The further experiments of Prof. Klebs, with a view to the elimination of the toxic properties, led to the employment of **Antiphthisin,** which gave excellent results in curing tuberculosis in guinea pigs, and which could be given to the human subject in doses several thousand times greater than tuberculin without producing any depressant effects on the heart, or other undesirable effects. The dose for an adult is $\frac{1}{10}$ of 1 cubic centimètre, and this dose may be increased by $\frac{1}{10}$ of a c.c., a day until 1 cubic centimètre is reached. The maximum dose that has been reached is 10 c.c. a day. After 100 c.c. of the remedy have been used, an intermission of some weeks or months might be allowed, or the treatment stopped entirely. The experiments of Klebs[13] for the removal of the toxins first led to the employment of tuberculocidin, but the still further purified product called antiphthisin, representing the germicidal properties without toxins, gives an entire and complete cure of tuberculosis in guinea pigs, and Klebs reports 90 per cent. of good results in all stages of human tuberculosis. Maragliano,[14] of Genoa, reports the experience of a three years' investigation in search of an antituberculous vaccine, which had resulted in the discovery of a **Serum** having a specific curative action in tuberculosis, that is to say, a serum presumably containing tuberculous antitoxine. It had been tried in eighty-two cases. He deprecates any exaggerated expectations in advanced stages of the disease when there exist profound lesions of tissue, and he emphatically declares that antituberculous serotherapy can be of use, and can reasonably be expected to effect a cure, only in those cases in which no destructive foci exist.

The experiments of Victor Vaughan[15] on rabbits lead to the following conclusions: (1,) The nucleins and nucleinic acid are powerful germicides; (2,) The germicidal constituent of the serum of blood is nuclein.

A degree of immunity to tuberculosis having been obtained in certain animals by means of **Yeast Nuclein,** Vaughan has tried it in the human subject in twenty-four cases with the following results:—(1,) In cases of pulmonary tuberculosis with cavities it does no good; (2,) It may retard the progress of long standing cases, so long as secondary injection with pyogenic germs does not occur; (3,) A temporary cure may be obtained in early cases of small area; (4,) It has proved satisfactory in urinary tuberculosis.

Coley[16] advocates the following drugs for the treatment of phthisis: **Guaiacol Carbonate; Salol,** in the diarrhœa of phthisis; **Morrhuol Creasoté,** (Chapoteaut): **Terebene**; intra-laryngeal **Menthol,** 20 per cent., with **Guaiacol** 3 per cent.

W. Kingston Fyffe's[17] investigation tends to show that **Creasote,** if given in sufficient doses, does certainly interfere with the virulence of the organism in a very marked degree. He found in the first series of cases, those taking the drug simply as an inhalation, no effect in the virulence of the disease was noted. In the second series, when creasote was administered by the mouth in doses varying from 2 to 12 minims three times a day, though when the smaller doses were given the diminution of the virulence was slight, yet, when the larger amounts were reached, there was an extremely marked diminution in virulence. In the third series, it may be pointed out that the animals lived longer than in any of the other cases. Further, creasote injected under the skin in tuberculous guinea pigs, provided the disease was not too far advanced, had a markedly restraining effect. Repeated attempts were made to grow tubercle bacilli in serum from animals inoculated with tubercular sputum from patients taking creasote in large doses, either by the mouth or by means of the creasote chamber, but with no success. Burbureaux[18] reports favourable results from creasote in a large number of cases.

Symptoms of intolerance are: sensations of coldness coming on six or seven hours after administration; sudden fall followed by a rise of temperature; sweats, immediate, or coming on after a time; black urine, and vertigo. The dose must be found out for each case by careful trial, the largest possible dose being administered. The author has given 27 minims of creasote in a day; after a week, 50; and after a month 150 minims, without reaching the limit of tolerance. He believes the greater the dose, the greater the effect.

J. Simon[19] advises the association of **Creasote, Iodoform,** and **Salol** in the form of rectal injections. Cohen[20] uses the following formula:—

℞ Creasote (beechwood) ♏ 30 to 80 | Glycerini ʒij
Tinc. Cardamon ʒiv | Alcoholis q.s. ad ʒiv

M. Sig.—Two teaspoonfuls in water after meals.

Bose[21] gives evidence in favour of the utility of the external application of **Guaiacol.** It has been much used since 1893, and it has been shown by Bard, Lépine, and others, that its antipyretic action does not improve the condition of consumptives with cavities, that it may perhaps ameliorate sclerosis, but that it produces better results in limited miliary tuberculosis. Its positive indication is true tuberculous fever with the formation of new granulations: its contra-indication is hectic fever.

Creasote and **Guaiacol** appear to be holding their ground as the most efficient remedies in the treatment of tubercular affections, and the writer is more than ever convinced that their utility is very much

in proportion to the dose which the patients are able to take. The introduction of the tasteless carbonates and benzoates has removed the small difficulty and objection to the administration of full doses by the mouth, and hence there is rarely need for the hypodermic administration of these drugs. It is only reasonable to expect that in the later stages of the disease there should be frequent failures, and even sometimes harmful results ; but in the early stages one may confidently expect improvement in nutrition, and diminution or disappearance of the sputum. The writer has found that toxic and depressing results sometimes follow the injection of 15 minim doses of pure guaiacol, or 30 minims of the 50 per cent. solution in oil, but these results are evanescent, and only occur in patients who are in the later stages of the disease. In other cases he has continued to inject 60 minim doses daily for weeks with no toxic symptom, but with very satisfactory results.

Colin Campbell[22] after demonstrating the reasonableness, practicability, and utility of the intra-tracheal method of treatment, advocated its more extensive use, not in phthisis only, but to many other pulmonary affections including hæmoptysis. The solution employed by Rosenberg and Grainger Stewart was composed of **Guaiacol** 2 per cent., **Menthol** 10 per cent., and **Olive Oil** 88 per cent. The author employed menthol in glycerine, which was a better medium than olive oil. A drachm, or a drachm and a half, was the quantity injected by a syringe specially modified for the purpose. The use of **Peptomangan** for anæmia in phthisis has been advocated by Karl von Ruck[23]. In all cases the improvement of the blood condition was highly satisfactory ; in quite a number it was phenomenal.

Pulmonary Gymnastics in phthisis have been advocated by Henry Hughes[24], of Bad Soden, who orders walking exercise to strengthen the muscles of the loins, hips, etc. The patient then undergoes, during four weeks, a course of instruction in various exercises which he is afterwards to carry out at home, and which are specially designed to call forth the activity of the respiratory organs. The occupation which this gives the patient, and the distraction of his attention from his own illness, are in themselves benefits of no mean kind. Babcock[25], having seen the good results obtained by Dettweiler, at Falkenstein, from **Open Air** treatment, describes a practical method which the practitioner can carry out in the case of a patient who is unable to leave his home. He lays down two propositions :—

(1,) A consumptive, who cannot seek change of climate, should pass his days in the open air, no matter what the stage of his disease ; (2,) Under proper precaution this may be done in all weathers, excepting

the severe cold of winter when the thermometer registers below fifteen degrees.

The abnormal sensitiveness to the cold must be overcome by friction of the surface, movements of the body, and the adjustment of additional clothing. Further details as to the proper precautions necessary are given in the author's paper in the "Journal of Amer. Med. Assoc.," April 6, 1895. Waxham[26], after long experience at Colorado, holds that climate unsuitable for those in whom a large area of lung is involved, or when pyrexia, sweats and great loss of flesh exist. Nervous cases and those with cardiac complications should avoid the higher altitudes. He considers a three to five years' residence is necessary, and that permanent residence in Colorado need not then be necessary. As a rule, it requires from one to two years for active cases to pass into the stage of arrest.

Dysphagia in Phthisis.—Lermoyez[27] recommends insufflation of the following powder instead of painting with cocaine :—

℞ Morph. Hydrochlor. | Gum Arab. grs. xv
Sacch. lactis āā, grs. xx |

M. Ft. pulv. Sig.—½ a grain to be used at each insufflation.

The application should be made before meals, and the effect lasts for many hours.

Night Sweats.—Sacaze[28] reports that with rare exceptions, phthisical patients have experienced great relief, both as regards insomnia and sweating, from the use of **Chloralose** in night sweats. The administration was begun, with 9 grains in cachet, the dose being repeated in half an hour, and twice afterwards at the same interval, if necessary. Conklin[29] reports **Agaricin** to be the most successful of all the drugs. Under its use the skin remained in a dry condition without suspicion of any kind of cutaneous activity. It was given in pill, grain $\frac{1}{12}$, at bedtime, or late in the afternoon, and a second in four or five hours.

Hopeless Cases.—The treatment of advanced (hopeless) cases of phthisis has been well summed up by Edward O. Otis,[30] in a paper. He points out the fact that cases of advanced phthisis are long drawn out; that they have an infinitude of ills, and demand much fertility of resource; that these patients are very frequently in a state of sepsis, and present the various symptoms of the septic condition, and that in addition to these are present the various symptoms resulting from the tubercular virus and its ravages. He gives his experience and views under the following headings, all of which are well worthy of attention: (1,) In Sick Room; (2,) Food; (3,) Fever; (4,) Sweating; (5,) Cough; (6,) Vomiting; (7,) Pains;

(8,) Diarrhœa; (9,) Hæmorrhage; (10,) Insomnia; (11,) Œdema; (12,) Mouth, Tongue and Lips; (13,) Anæmia; (14,) Heart Symptoms.

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Synopsis.—(Vol. 1895, pp. 10, 28, 70 and 479.) An astringent pill; ℞ Cup. Sulphatis, gr. ¼; Pulveris Opii, gr. ½; Ext. Gentianæ, gr. ij; M. et ft. pil. *Sig.*—1 or 2 pills for a dose, and repeated if necessary, in intestinal forms. **Liq. Aur. et Arsenii Bromidi**, 10 drops, or **Mercuric Bromide of Gold**, 10-drop doses, recommended in miliary form. **Insufflation of**: ℞ Iodoform, Ac. Boracic, āā gr. j; Morphia, gr. ⅛; M. is useful in laryngeal tuberculosis, cleansing larynx first with alkaline wash; also **Inhalation of Ethyl Iodide.**

Tuberculosis in Children.

Henry Dwight Chapin, M.D., New York.

Dr. Bourgois[1] advises the use of **Sodium Fluoride** in infantile tuberculosis. The cases selected presented various tuberculous troubles—chronic bronchitis, otitis and conjunctivitis—and all had a tuberculous family history. Under the fluoride treatment they all improved notably. The author reaches the following conclusions: (1,) Purified sodium fluoride has a marked action upon children, whether they have only a tuberculous diathesis or are already tuberculous, and the good results are enduring; (2,) The dose is from $\frac{1}{10}$ milligramme to 5 milligrammes ($\frac{1}{600}$ grn. to $\frac{1}{13}$ grn.) a day; (3,) When the specific effects of the remedy manifest themselves the dose is to be lowered; (4,) Children take the drug very well, and hardly ever show any intolerance.

Dr. Alex Eech[2] has used **Creasote** successfully in cases of scrofulosis. He is guided by the following principles: (1,) As large a dose as possible; (2,) Gradually increasing doses; (3,) Long-continued use;

(4,) Administration of the creasote a quarter-hour after the three principal meals ; (5,) Administration in milk. Children from one to seven years of age receive creasote with tincture of gentian, and, according to age, 1 part of creasote to 5, 4, 3, 2, or 1 part tincture of gentian. Children seven years old receive pure creasote. The maximum dose reached in three weeks is continued for two to four months, according to the case. The initial dose is always 1 drop, whether of the mixture with gentian or the pure creasote. After every fourth day the medicine is increased one drop.

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TUBERCULOSIS (Otitic). *W. Milligan, M.D.*

Tubercular affections of the mucous membrane of the middle ear and of the adjoining mastoid cells, are probably of much more frequent occurrence than is usually supposed to be the case.

The onset of the disease is essentially insidious, and its subsequent course asthenic.

The sudden appearance of a purulent discharge from the ear unaccompanied by pain or any of the usual symptoms of an acute sthenic inflammation, and the occurrence of a perforation covered by a creamy secretion in the centre of a pale œdematous and uninflamed membrana tympani should always excite suspicion. Early enlargement of the submastoid cervical glands, and the early appearance of facial paralysis must also be regarded as important indications of what is probably a tubercular lesion.

In acute inflammatory cases, the onset of the disease is, as a rule, sudden and painful. The pain, at first confined to the region of the ear, rapidly radiates over the entire side of the head, whilst the formation of pus in the middle ear is accompanied by rise of temperature, tinnitus, and often by distressing vertigo. When the membrane, if left unincised, ruptures, the discharge is usually profuse, and is found to contain large numbers of strepto- and pneumococci. In tubercular cases, however, the discharge is usually scanty, semi-purulent or sanious, and at a very early stage of the disease becomes markedly fœtid. An important point in tubercular cases, is the early and extensive destruction of bone which takes place. The mastoid cortex may for long remain quite intact, while extensive destruction of bone is taking place beneath. In fact, so much may this be the case, that the greater part of the petrous and mastoid bones may become destroyed, a mere superficial shell remaining. In acute sthenic cases, upon the other hand, early and extensive destruction of the bone is almost

unknown. In practice, great difficulties are encountered in the quest for tubercle bacilli, both in the discharges from the middle ear and in the tufts of granulation tissue so frequently met with in these cases. The pathogenic organisms met with, *e.g.*, strepto-, staphylo-, and pneumococci, appear to exert a baneful influence upon the tubercle bacillus, and hence, although the lesion may primarily be of a tubercular nature, it may be impossible to detect with the microscope any tubercle bacilli. Subcutaneous inoculation experiments with portions of material (bone, granulation tissue, etc.) taken from suspected middle ears or mastoid processes will, however, definitely establish the diagnosis in the comparatively short period of from two to four weeks. For this purpose, guinea-pigs or rabbits may be employed. If the material so used has been tuberculous in nature, rapid involvement of the glands in the neighbourhood of the site of inoculation will take place. For example, if a small scraping of bone be taken from a tubercular mastoid process and inoculated subcutaneously into a guinea-pig's hind limb about the level of the knee-joint, the glands in the immediate neighbourhood will soon be found to be involved. The superficial inguinal, the deep inguinal, the ilio-lumbar, the retro-hepatic, etc., will all in turn become affected, whilst deposits of tubercle will also be found in such organs as the liver and the spleen. If scrapings be taken from these enlarged glands and examined microscopically, tubercle bacilli will usually be found in abundance. The accompanying coloured illustration (*Plate XVI*) shows in a very beautiful manner the spread of the tubercular virus from the original site of inoculation (x). The various glands enumerated above will be seen to be enlarged, and deposits of tubercle will also be seen in certain viscera.

The recognition of the essential character of the disease is of the utmost importance, both from the point of view of treatment and of prognosis. The mortality in such tubercular cases is very much greater than in simple inflammatory and non-tubercular cases, and the younger the patient, the graver the prognosis. To treat such cases successfully, ample room should be afforded for free drainage. This, in the majority of cases, necessitates opening up the mastoid cells and antrum, and establishing a free communication with the cavity of the middle ear. All softened and disintegrating bone should be freely scraped away, all granulation tissue removed, and all irregularities in the bone burred down. To effect this satisfactorily, a good search-light should be thrown into the operation-wound. Iodoform powder should be freely dusted into the cavity so produced, and iodoform gauze used as the packing material. The wound should be kept open

Danielsson & Co., Chromo lith., London.

so long as there is the slightest trace of suppuration, and allowed to gradually granulate up *ab imo*, the idea being to finally secure a large and firm cicatrix. Tonics, such as **Cod-liver Oil**, syrup of the **Iodide of Iron, Syrup of Iodine,** or any one of the various **Hypophosphites,** should be regularly exhibited. Good food, milk, beef-tea, beef jellies, fish, eggs, etc., should be given, and if possible, residence at the seaside, or in high and dry moorland air, should be secured.

TUBERCULOSIS OF BLADDER. (See "Bladder, Diseases of.")

TUBERCULOSIS OF KIDNEY. (See "Kidney, Diseases of.")

TUBERCULOSIS OF THE LARYNX.

P. Watson Williams, M.D., Bristol.

Pathology.—Lake[1], while considering that there can be little doubt. as far as clinical and pathological evidence shows, that the auto-infection of the larynx arises both from the bacilli being conveyed to the seat of deposit by the blood and lymph streams and by their introduction from the surface, being carried from the lung in the sputum, believes that the shallow tuberculous ulcers are the product of surface-infection, and that probably that form of disease which starts between the muscular layers is caused by the former method of infection. He shows that often, if not invariably, the surface-infection is caused originally by the micro-cocci present along with Koch's bacillus in the sputum, and that the ulceration and tuberculous infection are secondary to abscess-formation in the epithelium. Unlike Fränkel[2], he has never been able to demonstrate Koch's bacillus in the inter-epithelial spaces. In a considerable number of cases of inter-arytenoid hypertrophy in phthisis, Lake has found a certain fairly uniform condition, viz., the submucous tissue is practically healthy, but in the epithelial layer there is a tendency to abscess-formation, and in some he found numerous cocci. The non-tuberculous ulcer resulting from the disintegration of the epithelium covering the abscess becomes secondarily infected by Koch's bacillus from the sputum. These simple superficial ulcerations he has found yield to 3 per cent. solution of **Chromic Acid**. Thyroid extract, so beneficial in lupus, has not yielded any result in the cases he has observed.

John Wright[3] remarks that as we clinically see the disease, laryngeal phthisis, "the pyogenic cocci may first make a breach in the epithelium, through which the bacillus enters. It is doubtful whether it can penetrate the glandular epithelium or not."

In Willigk's[4] one thousand three hundred and seven autopsies, the larynx was involved two hundred and thirty seven times, and the pharynx only once.

Dansac[5] has investigated the condition of the nerves in tuberculous arytenoiditis, and shows that the axis cylinder elements are hypertrophied and tumefied, and that the perineuritis described by Balzer is in reality only sclerosis secondary to the proliferation of the axis cylinders. It is a pseudo-neuroma, a nerve hyperplasia *plus* inflammatory deposits. The hypertrophy and multiplicity of axis cylinders, explain, he believes, why, in certain arytenoidites, hyperæsthesia is so pronounced at the same time as the tissues of this region are hypertrophied, sometimes even resembling glottic œdema; and it explains how it is that ablation of this hyperplastic nervous production of inflammatory infectious origin is followed by immediate and definitive disappearance of dyspnœa and dysphagia.

Tuberculous tumours of the larynx are discussed by Payson Clarke[6], who reports a case of his own, and briefly reviews all the thirty-four published cases. He remarks that tuberculous disease of the larynx appears, very rarely, to manifest itself in the form of smooth, rounded tumours, single or multiple, or in the form of papillomatous growths which are found, on microscopic examination, to consist of round-celled tissue surrounding tubercles containing tubercle bacilli, often caseous, and accompanied often by no, or only slight manifestations of pulmonary tuberculosis. The tumours are rarely ulcerated, and the mucous membrane covering them is generally normal in appearance, varying in colour from pinkish-grey to dark red. They are generally firm, occasionally soft, usually sessile, rarely pedunculated. Their most common sites are the ventricular bands, vocal cords and ventricles, and are of slow growth or very chronic, the symptoms being hoarseness, often dyspnœa, more rarely dysphagia, and painless as a rule. He considers that they are generally secondary. The growths cannot be distinguished clinically from fibroma, papilloma, or sarcoma.

TREATMENT.—If only a local tumefaction without ulceration is present, I have obtained favourable results from the sub-mucous injection of the affected area, with 2 per cent. **Pyoktanin** or **Aristol**, and, more recently, with 50 per cent. solution of **Phenazonum** (*Fig.* 44).

The radical treatment of laryngeal tuberculosis has been somewhat fully discussed during the past year, and though the gross results obtained even in the most experienced hands do not lend much prospect of "cure" in the vast majority of cases, it is all the more important that we should form a just appreciation of our position from the fact that many sufferers have lately built their hopes of relief on the reports circulated in the public press.

Theodor Heryng has for some years past devoted much time and attention to the surgical treatment, and has formed the following conclusions based on an experience of more than three hundred cases, which we will quote *in extenso*:—

(1,) Laryngeal tuberculosis can heal by itself without any local treatment. The ulcers situated on the vocal cords and posterior wall of the larynx heal most frequently; very rarely those more serious cases in which the infiltration and proliferation products are attended with deep ulceration; as also those in which the disease extends to the cartilage, accompanied with aphonia and severe dysphagia, leading rapidly to disintegration, and extension to the lungs.

(2,) *The chief indications in the treatment of tubercle of the larynx, which is almost invariably accompanied with tuberculous disease of the lungs, are hygienic, dietetic and climatic.*

(3,) As in most cases of laryngeal phthisis, severe dysphagia occurs, it follows that *the first and most important indication in the treatment to be considered is the removal of the dysphagia.*

(4,) The second equally important indication touches the special cases in which the breathing becomes difficult, and symptoms of stenosis appear on account of tuberculous infiltrations and proliferation products.

(5,) The third indication has to do with the recovery of the impaired or lost voice.

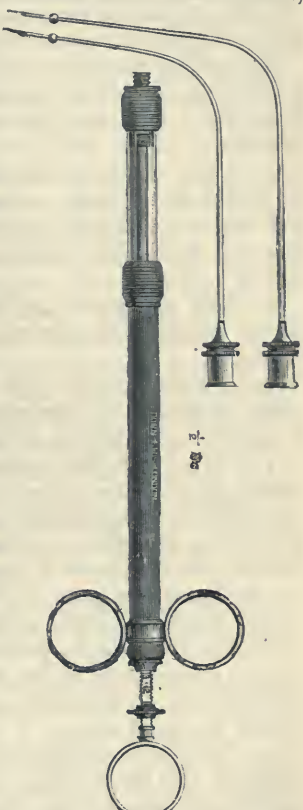

Fig. 44.—Watson Williams' syringe for submucous injections in tuberculosis of the larynx (half size).

(6,) The healing of the deep ulcers of the larynx resting on inflammatory infiltrations, surrounded by proliferation products, and certain forms of localized chronic laryngeal tubercle, is effected quickest by scraping or rather *removal of the tuberculous tissue.*

(7) *The surgical treatment is indicated:* (*a*,) In tuberculous tumours of the epiglottis; (*b*,) In circumscribed chronic tumour-

like infiltrations of the posterior wall of the larynx, which show little inclination to break down ; (*c*,) In chronic tumours resting on an inflammatory base, surrounded with poliferation products, *which resist all other methods of treatment* ; (*d*,) In partial disease of the larynx, when the epiglottis, false cords and lateral ligaments are affected.

(8,) *Surgical treatment is contra-indicated :* (*a*,) In advanced phthisis of the lungs, with hectic and wasting ; (*b*,) In diffuse miliary tubercle of the larynx, or rather of the larynx and pharynx ; (*c*,) In all cachectic conditions ; (*d*,) In severe stenosis of the larynx, caused by inflammatory swelling of the affected parts. In these cases tracheotomy must be performed as soon as possible ; (*e*,) In patients exhibiting fear and nervous excitability, mistrust of the physician, and who are always changing their doctor, *especially those whose condition promises little hope of recovery.*

(9,) With the proper application of cocaine, the operation itself is not painful. Submucous injection of cocaine is hardly ever necessary.

(10,) Pyoktanin (1 to 2 per cent. solution) has proved a very good means of preventing inflammation in the parts operated on. It must be applied to the surface of the wound, twice a day.

(11,) Recurrence takes place frequently at the place operated on, sometimes at a little distance from it. It is explained *not only by inaccessibility of certain parts of the larynx for our instruments*, but also by the imperfect performance of the operation. In most cases, however, the recurrence is due to the disease spreading to the lungs, and the insufficient power of resistance to the infection.

(12,) *Nearly the whole of the upper part of the larynx* is accessible to surgical treatment, by suitable instruments. It should be a rule in surgical treatment, to excise as much of the affected parts as possible, in one sitting. The double curette has the advantage over the single curette, in certain cases.

(13,) *It must be explained to the patients and their friends, before the operation, that the dysphagia cannot be removed at once, by surgical interference ;* that it is *very often increased for a few days*, and, further, that *the operation does not effect a radical cure.* It is also advisable to tell the patients that the radical removal of the accessible parts is very seldom successful in one sitting ; *that in spite of a successful operation, the disease in the larynx may return, and that the physician can give no guarantee of ultimate restoration to health.*

(14,) The conditions of success of the surgical treatment, in general, depend : (*a*,) On the local character of the affection, its extension and its nature ; (*b*,) On the general state of the patient, his nutrition and

his strength ; (*c*,) On the anatomical character of the affection of the lungs ; (*d*,) On the age of the patient, his constitution, his profession, his material circumstances, his temperament, and his character ; (*e*,) On the thoroughness of the operation itself and the skill of the operator, as well as on the localization of the processes in such places where it is technically possible to perform a radical extirpation of the infected tissues ; (*f*,) On the careful after-treatment, and the capability of the patient to submit to a prolonged dietetic and climatic treatment.

(15,) In spite of the observation of all these points it is difficult to establish a prognosis ; it requires much experience, and in spite of that one cannot speak precisely in a great many cases.

It is an established fact that most patients affected with laryngeal phthisis die of pulmonary phthisis, it is also a fact that a large proportion of temporarily cured cases are threatened with recurrence ; but it can also be said positively that in rare instances there has been observed complete cure of the tuberculous processes in the larynx, which lasted for years, and that indubitable anatomical proofs have made that fact a scientific axiom ; that further partial cures are in certain cases lasting ; that dysphagia, dysphonia, and sometimes dyspnœa, can be relieved by surgical operations, and that now we are not so helpless in meeting these dangerous affections as formerly.

(16,) Serious bleeding after the operation is very rare. It can be readily stopped by the application of a mixture of lactic acid and solution of iron perchloride in equal parts.

(17,) The want of success in treating cases of laryngeal phthisis by surgical or therapeutic means is often due to the disease being recognized too late for treatment to be of any use.

(18,) The surgical treatment demands on the part of the physician the greatest self-sacrifice, patience, great perseverance, thorough *knowledge of the operation*, and well-made sharp instruments. *The operation must be done in the patient's home, or in the hospital.* The after-treatment requires the greatest attention, and the patient must be kept under observation for months and often years.

(19,) Bad cases of laryngeal phthisis ought to be treated in climatic establishments set apart specially for consumption. It would be desirable that the physicians in such establishments should acquire the art of operative treatment *so long as we are unable to exercise other means which will take the place of the surgical treatment necessary in many cases.*

(20,) The power of absorption in severe tuberculous infiltrations, as also the likelihood of healing of even extensive ulcerous processes of

the larynx, with complete restoration of the voice, has been proved to exist by anatomical and microscopical preparations as well as by long-continued clinical observation.

Krause[8], who first recommended the use of lactic acid for the cure of tuberculous ulceration, appears to take a more sanguine view of the applicability of surgical measures in laryngeal tuberculosis. Concerning the selection of cases, he says that he cannot consent to the extreme carefulness demanded from many sides. He states that even in the far advanced or desperate cases, when there is high fever and decrepitude, we can give ease instead of leaving the patient to suffer. He finds that it is possible to relieve or remove the tormenting and depressing difficulties of swallowing by the excision of a particularly painful infiltration upon the epiglottis, or one of the ary-epiglottic folds. But he remarks that the principal value of this treatment lies in such cases as we can save. In operating he attacks the most diseased, and for nutrition and respiration the most dangerous parts first, proceeding at subsequent sittings till all diseased areas are removed, it being his opinion that we need not leave out from the operation any diseased part of the larynx, whereas formerly he was timid about cutting through the epiglottis or the arytenoid cartilage, but having observed that the cartilages cicatrize perfectly well, he now treats them upon the same principle as the other parts. Krause cites two cases, one of which died from hæmorrhage six years after he had induced cicatrization of the laryngeal diseased areas, the other whose larynx was cured in 1888 is now in a very bad pulmonary condition.

Gleitsmann[9] (New York) has curetted twelve cases ; of these, four had shown no recurrence of laryngeal tuberculosis in from six to ten months.

Chiari[10] says these operations of removal of the swellings and currettement are now undertaken by all laryngologists, nearly always with only palliative results, yet frequently also with complete local healing. "I need only here mention that although I have myself tried all the methods (of operating) which are recommended, I only treat tubercular ulcers and infiltrations by operation : (1,) When dyspnœa exists and where the stenosis can apparently be easily relieved by endolaryngeal operations ; otherwise, I prefer tracheotomy ; (2,) When dysphagia and hoarseness are caused by easily removable vegetations and the general condition is not too bad ; (3,) When tuberculosis of the larynx manifests itself in the form of circumscribed infiltrations, which can apparently be thoroughly removed, the patient being in good general health. But one must always remember that a radical operation is very difficult to carry out ; that one can usually only

bring about a temporary improvement; and that general treatment, tonics, etc., must always be given the first consideration; but one also frequently sees laryngeal tuberculosis remain stationary without local treatment; often under favourable general conditions it improves—yes, frequently, even entirely heals."

Wroblowski[11] has found submucous injections of phenazonum most useful. Thus, in a patient who had not been able to take solid food for about six months, one hour after the injection of a 50 per cent. solution into the region of each arytenoid body (one division of Heryng's syringe, equal to 1½ grains of phenazonum being applied in each place), the patient was able to eat a beefsteak. Local anæsthesia begins fifteen minutes after injection, and lasts from six to twelve hours.

Siegmund Moritz[12] has found similar favourable results from the application of a paint of 10 per cent. **Cocaine** and 30 per cent. **Antipyrin.**

Carl Von Ruck[13] (Asherville) speaks most hopefully of Kleb's **Antiphthisin,** which, he says, is in its chemical reaction a deuter-pepton. He has repeated Kleb's experiments on guinea-pigs, and finds that the antiphthisin is less poisonous than tuberculin, while the latter loses its curative influence but retains all its poisonous qualities after separation of the deuter-pepton.

He states that having now a year of clinical experience of its employment in pulmonary tuberculosis, "during which I have treated nearly a hundred patients with antiphthisin, and having had as good opportunity as a special institution under most careful observation of the patients in the light of a considerable previous experience can afford, I can only say that my conviction as to its clinical value has steadily grown stronger, and that I have uniformly observed favourable changes in the tuberculous processes, often to their entire disappearance, in the lungs of my patients, with return to normal conditions, where percussion and auscultation had given every evidence of a pathological state before its application. I have further seen the rapid involution of the tubercle bacilli in the sputum, and their entire disappearance from it while the sputum was still purulent, in early stage cases; I have not observed their return in such sputum upon subsequent examinations when continued until no more expectoration was available. On the other hand, I have seen the persistence of consolidation, or only partial clearing up of the percussion note, or noted no apparent change at all, especially in old lesions and over cavities, and I have explained this by the fibroid changes which were evidently present. In cases with cavity the tubercle bacilli have been much more persistent, and degenerative forms did not appear as

early in globular or cavernous sputum. It is similar with the fever, but most encouraging, as to the specific effect of the remedy, has been its success in acute cases, of which I have had four among my patients. All the patients dated the beginning of their illness from within two months, and severe anæmia, exhaustion, and rapid emaciation were well-marked symptoms. In every one of these cases the fever began to decline within the first two weeks; it soon became intermittent, and after a month or six weeks it was so far controlled that it rarely reached 100° F., while the local and general improvement of the patient was satisfactory in the highest degree. One patient is discharged apparently cured, the three others are still under treatment and are steadily improving.

"In the early stages of the chronic form I have without exception seen the same favourable course. On the other hand, I found the temperature less influenced in cases which had suppurating cavities, or which presented evidence of cheesy pneumonic processes, with or without apparent softening and progressive destructive changes. The local and general improvement in such cases was, as a rule, less evident, although some portions of the consolidation present cleared up in almost every case treated. In quite a number of such advanced cases the improvement became more manifest as the treatment was continued, and led to satisfactory restoration of the general health and apparent arrestment of the local disease, justifying their discharge.

"With this clinical evidence in my own cases, and with corroborating statements by all other practitioners who have used the remedy for a sufficient length of time, I believe that I can conscientiously recommend its trial to the profession, especially since I have seen not the slightest indication of any harmful incidental effect.

"In conclusion, I would once more call attention to the necessary limitations of the remedy which suggest themselves from a full consideration of the pathology of tuberculosis, especially of the advanced stages, and which my experience has shown to exist. If we bear these in mind we shall not expect to accomplish the impossible, nor shall we be likely to suffer disappointment."

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TUMOURS OF BLADDER. (See "Bladder, Diseases of.")

TYPHLITIS.

Synopsis.—(Vol. 1895, p. 488.) Grasset used a full **Warm Bath** for half or an hour's duration. Every hour a teaspoonful of a purgative, viz., **Castor Oil** and **Oil of Sweet Almonds**, 1 part each, and **Syrup of Lemon**, 2 parts, until copious evacuations result. Anoint iliac region with **Mercurial Ointment** with **Belladonna**, followed by a large, thin, hot **Linseed Meal Poultice**. In very stubborn cases add 1 drop **Croton Oil** to the purgative. In recurring cases he advises a diet leaving little residue; application of actual cautery every week to the inflamed part; and daily frictions, if necessary, with **Belladonna Ointment** (*i.e.*, if patient will consent.—Ed.). To overcome constipation a laxative pill at bed-time, consisting of **Powdered Belladonna, Extract of Belladonna**, and **Podophyllin**, āā gr. $\frac{1}{6}$. Antisepsis of intestine is secured by taking before and after each meal a capsule containing 7 or 8 grains of **Benzol-naphthol.**

TYPHOID FEVER. (See also "Fever, Indian Typhoid.")

William Osler, M.D., F.R.C.P. (Lond.), Baltimore.

According to the prevailing theory, the symptoms of typhoid fever are due to a progressive intoxication by the poisons which result from the growth of the specific bacilli in the intestine, and in the lymph follicles of its walls. With the development of a better technique, recent observations have made it very probable that the disease is not simply an intestinal fever, but a general infection, with special localizations in the lymph follicles, spleen, and bone-marrow. It is quite startling to learn that even in cases of typhoid fever, fatal at the height of the disease, bacilli may not be found in the contents of the bowel, and that they may be absent from the stools of typical cases throughout the entire course of the disease. The wide distribution of the bacilli in the body speaks also for a blood infection. In addition to their presence in the spleen and mesenteric glands, they have been found in the liver, in the bone-marrow, and in the kidneys. Their frequent occurrence in the serious lesions complicating the disease, and their long persistence, as in bone necrosis, favours this view. There are remarkable cases, too, with very slight intestinal lesions (and symptoms), while the general features of the disease are most pronounced, and the typhoid bacilli are so abundant in the blood and in the various organs of the body as to constitute a veritable septicæmia. Bacteriological examination has shown further that the symptoms may not all be due to the specific bacilli, but in the course of a few weeks these may give way to other pathogenic cocci, which gain entrance through the intestine. Illustrations of this and of other types of infection in typhoid fever are given by Dr. Flexner in the recently issued vol. v. of the "John Hopkins Hospital Reports."

At present the practitioner has the choice of three methods in the

the treatment of typhoid fever, symptomatic, antiseptic (so-called), and hydrotherapeutic, any one of which he may practise with the full assurance that 85 per cent. of the cases will recover. Whether he gives active antipyretic drugs or no drugs at all, whether he gives laxatives or intestinal antiseptics, or both, whether he trusts to sponges or to full cold baths, he certainly will not lose more than 15 per cent. of his cases. He may lose in hospital practice 17 or even 20 per cent., but in his private practice the death rate will be very much smaller, and he may have a "run" of forty or fifty cases without a death. In other words, typhoid fever is a disease of which an immense proportion of all cases gets well. From toxæmia, from the accidents of the lesion, hæmorrhage or perforation, or from the complications, a certain percentage will surely die, despite everything that can possibly be done. In each century of cases the battle is over eight or ten patients, critically ill, in whom the issues of life and death may depend on the doctor or nurse. Typhoid fever is a notoriously uncertain disease, in which one never knows what an hour may bring forth, and the mild case of to-day may be in serious jeopardy to-morrow.

Both in Montreal and Philadelphia I was in the habit of treating typhoid fever symptomatically, using sponges and antipyretics to reduce the fever. For some years, also, at the Montreal General Hospital, I had considerable experience with the use of carbolic acid and iodine. The mortality in my cases was neither better nor worse, so far as I could judge, than in the practice of my colleagues.

During the first year in which the John Hopkins hospital was opened the cases were treated symptomatically. The number of severe cases was unusually large, and the mortality was proportionately high. For the past five years we have used the Brand method exclusively, carrying it out fully with a few minor variations. In a recent issue of the hospital reports (vol. v.) I have analysed our material. There were treated three hundred and fifty-six cases, of which twenty-six died—a mortality of 7·3 per cent. Fifty-seven of these cases were not bathed for various reasons, chiefly because of the mildness of the disease. Of the two hundred and ninety-nine cases which were bathed, only twenty died—a mortality of 6·6 per cent. Among the unbathed cases there were four in which the patients were admitted in too enfeebled a condition to bathe, and in two other cases the diagnosis was only made post mortem.

It would appear that under a system of rigid hydrotherapy the graver manifestations of the disease are less common. The old picture of typhoid fever is not so prevalent. This autumn, for example, we had more than twenty-five cases in the house at one time without

an instance of delirium or of dry tongue. It is not correct to claim that with rigid hydrotherapy delirium is never seen. In the five years we have had twenty-two bathed cases, in which at one time or another delirium was a symptom, but the cases with *coma vigil* and extreme jactitation have been very rare. The chief benefit of the cold bath certainly is its tonic and stimulating, rather than its antipyretic influence. Statistics are not of much value in estimating the merit of any plan of treatment, unless the figures are very large. It is a most suggestive fact that in all of the hospitals in which the method has been introduced of late the mortality has fallen to what may be regarded as the normal death rate in institutions in which it is carried out, namely, about 7·5 per cent. This percentage (in some a lower one) has been obtained not alone in Germany and at Lyons, but at the Brisbane hospital, by Hare at the German hospital in Philadelphia, at the Royal Victoria hospital, Montreal, and in the wards of Dr. C. J. Wilson at the Pennsylvania hospital, Philadelphia. It is safe to say that the death rate from typhoid fever in the institutions named is about 40 per cent. lower than in general hospitals without hydrotherapy.

The cold bath treatment has forced its way to recognition by the overwhelming array of figures which can be brought in its favour. It is not a pleasant practice, and it is very onerous on the nursing staff, but neither personal predilection nor the fear of extra work should be allowed to stand in the way of its adoption in hospitals until some more life-saving method is available. Of its use in private practice, except in our private ward, I cannot speak with adequate knowledge. I have several friends who carry it out systematically and successfully. I see a certain number of cases each year, in which I recommend it to the attending physicians, but I do not think that its use is extending.

I cannot speak from personal experience of the more recent, so-called antiseptic plans of treatment, which have no *raison d'etre* if the disease is not an intestinal toxæmia. The evidence, so far as I can learn, is not forthcoming to show that any measures yet devised can render the bowel "aseptic." I very often have temperature charts sent to me, showing, under special forms of treatment, a subsidence of the fever on the fourteenth or sixteenth days. I have not seen one which cannot be paralleled from my records of cases treated with the cold bath, or of others in which the fever has spontaneously subsided at the end of the second week.

Hydrotherapy systematically used enables us to dispense with drugs, except in a few cases. Other than the stimulant after the bath, I order no medicine. If the heart becomes very feeble strychnia is given. A milk diet is the rule, and it is not in one case in twenty that

any change is indicated. The stools are carefully examined, and if there is much fat or any curds the milk is diluted, and egg-white and beef juices are substituted. I never order laxatives. If there is any tendency to constipation an injection is given every other day. Looseness of the bowels was present in only 30 per cent. of the three hundred and eighty-nine cases treated in the past six years. There are few symptoms to be dreaded more than diarrhœa. Cases which are constipated, or in which the bowels are regular, rarely die. Of the thirty-four fatal cases during the past six years, in twenty-seven there was diarrhœa. In its absence meteorism rarely occurs, hæmorrhage seldom, and perforation still more rarely.

TYPHUS FEVER.

Synopsis.—(Vol. 1895, p. 489.) Bond deprecates drastic drugs, and secures ventilation—2,800 cubic feet per patient; diet of **Milk** and **Beef-tea**, and **Cold Water** *ad libitum*; fish as soon as the tongue moistened after crisis. **Enemata** or **Castor Oil** for constipation, the above often including the entire treatment, but **Hydrochloric Acid** and **Gentian** were sometimes given as a placebo. **Enemata of Water** at 100° Fh., or of **Starch**, relieved diarrhœa. Opium was badly borne. An expectorant containing **Ol. Terebinth**, ♏ 10—20, was useful in the bronchial and lung congestion. Inunction of **Oleate of Mercury**, 10%, in parotid swelling. **Sulphonal** was a useful hypnotic, but caution was required if heart failure associated with pulmonary and renal symptoms presented. Bond considers alcohol quite inadmissible.

ULCER (Rodent). (See "Rodent Ulcer.")

ULCER OF CORNEA. (See "Eye, Diseases of.")

ULCERS. *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

Bremner[1] of Toronto strongly advises bandaging. He applies twenty-four yards of bandage to each leg.

Frank[2] employs **Unna's Gelatin**, and the local application of **Resorcin.** He uses it in a 10 per cent. plaster.

Kirsch[3] dresses the ulcer with **Iodoform Gauze,** and places over it a sponge. He finds this sponge compression very useful.

Dr. Ghose[4] of Saganopore recommends **Indigo** ℥j, simple ointment ℥j. He says it does best in damp and rainy weather.

In the "Practitioner" for August 1894 the following is given as an application to foul ulcers :—

℞ Amyli		Glycerini	
Liqour Iodi	āā ℥j	Aquæ	āā ℥ij

To be applied twice daily.

Stoker recommends the immersion of the wounds in **Oxygen Gas,** and says that ulcers heal very rapidly under this treatment.

Marquant[5] reports on the treatment of chronic ulcers by the **Brush Discharge.** The positive pole was used. It does best in young people, but even in old varicose ulcers the results are remarkable.

REFERENCES.—[1] "Dominion Medical Monthly"; [2] "Journ. of the American Medical Association," vol. xxii., No. 6; [3] "Therap. Monatsch.," Sept., 1893; [4] "Indian Medical Record"; [5] "Archiv. d'electrical Med.," Aug. and Sept., 1894.

URÆMIA.

Synopsis.—(Vol. 1895, p. 495.) Avoid cold and errors in diet; confine patients to bed in warm rooms; hot-air or water baths, followed by wrapping in blankets, if dry, until sweating is induced. Renal congestion is treated by **Dry or Wet Cups** over renal region, with **Dry Frictions of Skin**; **Milk Diet** exclusively for a time; **Fresh Air, Moderate Exercise,** avoidance of fatigue or emotional excitement; diuretics, such as **Potash Salts,** but these must be cautiously used; and infusion of digitalis is objectionable if renal tubes are clogged; if cardiac weakness is a primary factor **Digitalis** is useful in some cases. Robinson advises **Moderately Cold Water** given by high enemata to promote diuresis, and these have been used in a bad case at blood heat, with **Common Salt,** 1%, added. When other means fail, **Venesection** or blood-letting with **Cups** or **Leeches** (12 to 20 ounces in robust patients), but in some cases this abstraction should be followed by **Saline Transfusion.** In extreme cases hypodermic injections of **Warm Sterilized Salt Water,** 1% of salt, may be given. Opium is rarely useful, **Chloral** being better; in one case pilocarpine hastened death. Intestinal fermentation must be met by **Antiseptics.** Oppression of breathing is met by inhalation of **Amyl Nitrite** or **Nitroglycerine,** or **Oxygen** and **Nitrogen** combined; delirium by **Chloral**; nausea by **Lime Water, Vichy, Brandy** or **Iodine**; collapse by **Hypodermic Injections of Coca, Strychnine** or **Ether. Tinc. Veratrum Viride,** 10—15-drop doses hourly, or hypodermically in 5-drop doses, has given good results in uræmia of pregnancy, but the drug is depressing. Peabody uses **Urethan** hypodermically to control uræmic convulsions. Piperazin is on trial at present.

URETER (Diseases of). *E. Hurry Fenwick, F.R.C.S.*

Catheterization of Ureters.—Brown[1] states that with Brenner's modification of Leiter's cystoscope he has found little or no difficulty in catheterising the ureters in the male or female.

With the bladder containing, if possible, from 150 to 200 c.m. of fluid, or even more, he passes the anterior cystoscope and takes a complete survey of the bladder. This having been done, he replaces it with the Brenner instrument, which is passed with the stylet fixed. The ureteral orifices are searched for, and when these are found the stylet is removed and the catheter inserted and passed nearly to the inner opening of the cannula. The ureteral orifice is again sought for and the catheter passed into it. To prevent kinking of the catheter, and to guard against exerting undue traction upon the ureteral orifice, the cystoscope must be kept in line with the catheter so long as the latter

is within the ureter. Not infrequently it has been found of great advantage to give the catheter a slight curve at the tip. Nitze,[2] who has found the method very uncertain, asserts that there is little difficulty in catheterising the male ureter by passing through a special canal fixed to the cystoscope an elastic catheter, the end of which is made to take a direction when in the bladder corresponding to that taken by the lower extremity of the ureter as it passes through the vesical wall.

There is no doubt, however, that in women Kelly has demonstrated a method whereby the ureters can be catheterised with ease and certainty. The instruments needed are a head lamp, a small urethral speculum, an urethral dilator, and a catheter.

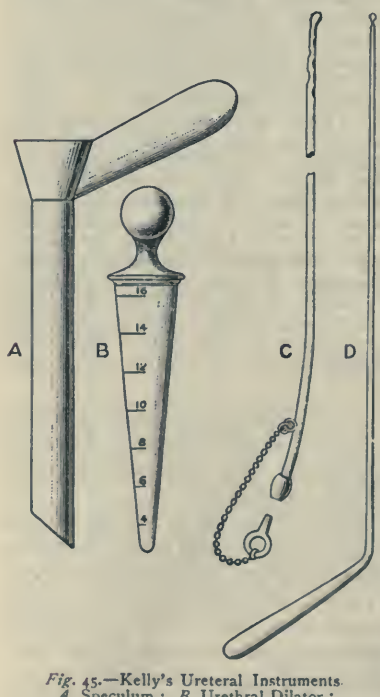

Fig. 45.—Kelly's Ureteral Instruments. *A*, Speculum; *B*, Urethral Dilator; *C*, Ureteral Catheter; *D*, Probe.

The woman is placed in the Trendelenberg position, hips elevated, the urine being previously drawn off.

The urethral dilator (*Fig.* 45 *B*) is now gently pressed into the urethra until the canal is dilated sufficiently for the introduction of a speculum (*Fig.* 45 *A*). Directly the speculum enters and the plug is removed the bladder fills with air, which enters with an audible rush, and if the head lamp (*Fig.* 46) be now focussed on to the open end of the cannula (*Fig.* 47), every detail of the bladder can be leisurely examined. Generally a little water collects and falls to the top of the bladder, and this, if it interferes with the inspection, can be sucked out. The speculum is now withdrawn until its eye rests on the trigone. With a little inclination to either side either ureteral orifice can be exposed and a catheter (*Fig.* 45 *C*) or kidney sound passed up the ureteral canal.

The ureteral orifices may be a little displaced. The probe-pointed

searcher (*Fig.* 45 *D*) will then be found of value in probing for the orifice.

The lamp which the collator has found of real value is the Isaac search lamp, fixed into a spectacle frame (*Fig.* 46) by Down (St. Thomas' St., London). The general position of the patient is shown in *Fig.* 47; and *Fig.* 48 represents the manner in which both ureters may be catheterised and the urine collected in sterilised test tubes. The collator has been able to sound the pelvis of the kidney for stone with a metal pointed flexible bougie.

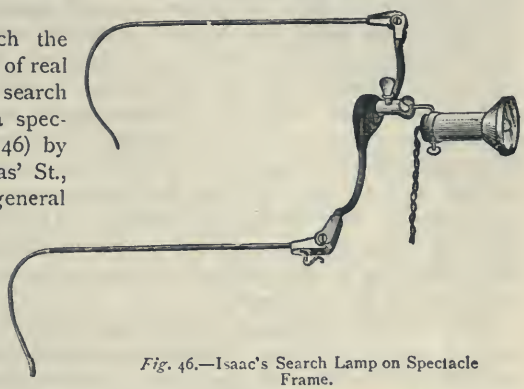

Fig. 46.—Isaac's Search Lamp on Spectacle Frame.

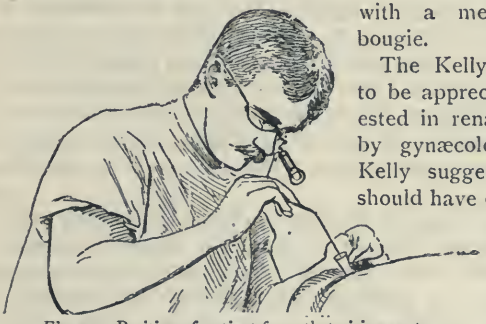

Fig. 47.—Position of patient for catheterising ureters (after Kelly).

The Kelly method cannot fail to be appreciated by those interested in renal surgery as well as by gynæcological operators, for Kelly suggests that the ureters should have catheters laid in them before hysterectomy is undertaken. By this means fewer accidental resections of the ureter will ensue.

Surgery of Ureter.—Christian Fenger,[3] after considering the anatomy, general and surgical, of the ureters, discusses *injuries to the ureter.*

Accidental wounds, of which Tuffier found only five cases in the literature (three incised or punctured wounds and two gunshot-wounds), have not as yet been

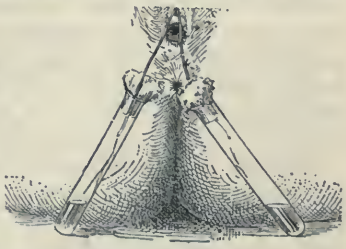

Fig. 48.—Method of collecting urine from both ureters in a sterilised tubes.

treated by direct ureteral surgery. If positive diagnosis can be made (and intermittent discharge of small quantities of urine at the time might make the diagnosis positive), and if the external wound is extraperitoneal, there is no reason why the ureter should not be cut down upon, and the wound treated by one of the methods now at our disposal. Of subcutaneous wounds or ruptures of the ureter, sixteen cases are on record. It is uncertain whether in these traumatic cases the ureter is crushed against the first lumbar vertebra, or is so stretched from the kidney as to be ruptured in its upper portion. Both methods are possible. The fact remains, however, that most of the ruptures are found above the true pelvis. Early diagnosis is often difficult, if not impossible, because of the uncertainty of the symptoms.

Slight transient hæmaturia, which might easily be overlooked, was noted in only three cases. Copious hæmaturia indicates rupture of the kidney rather than of the ureter. Hæmaturia may be entirely absent. If no injuries to other organs complicate the ureteral rupture there are no grave symptoms in the beginning.

The next important symptom, swelling from the accumulation of urine around the place of rupture, is not seen until some time after the receipt of the injury; seven days (Allingham), two weeks (Chaput), two to three weeks (Godlee, Page, Barker, Hicks), thirty-nine days (Croft), seven weeks (Stanley), or several weeks (Cabot). The swelling is usually accompanied by pain, is localised, round, oblong or sausage shaped, following the course of the canal, and is palpable from the abdomen.

The surgical treatment has never yet been directed in an early stage to the ureter itself, but has consisted in puncture, single (Joel), once repeated (Hicks), or five times repeated (Stanley), all of which were successful, or incision and drainage, either through the abdominal cavity (Chaput, Page), or through the lumbar region (Allingham). In most of the cases septic infection of the kidney took place through the resultant fistula, and secondary nephrectomy was necessary to save the patient's life (Godlee, Page, Barker, Chaput, and Bardenheuer). In other cases wherein the collection was not even opened and the patient survived, obliteration of the ureter (Havilland), or strictures ensued (Pye-Smith, Soller, and Fenger).

Suture of the ruptured ureter has not yet been attempted, but it might possibly be done, although it will probably be difficult to find the rupture, and this is much the more as an early diagnosis is rarely made. It is ordinarily not until some weeks later, when the swelling from urinary infiltration sets in, that operation is resorted to.

Whether or not the ureter can be found in an irregular sloughy area, and the rupture successfully dealt with, is as yet an open question.

Operations on the Ureters for Stone.—Stones in the ureter are most commonly arrested in the upper portion and with about equal frequency in the middle and vesical portions. They are removed by different methods according to their location :—

(*a*,) *Removal through the Bladder.*—Stones have been removed by dilatation of the female urethra by Emmet, Berg, Richmond, Czerny, and Sänger ; by suprapubic cystotomy in two cases (Tuffier). Ureteral stones often protrude into the bladder and can be recognized by the sound. The mucous membrane covering them may have to be divided, but the stones are usually extracted without difficulty. The wound in the vesical end of the ureter is usually left open, but is sometimes sutured, as in the case reported by Berg.

Stones in this location, so far as operative procedure is concerned, should be classed among stones in the bladder.

When the stones are located a little higher up, but not accessible from the bladder, they may be reached from the vagina or rectum by

(*b*,) *Ureterotomy through the Rectum.*—Cecí removed successfully a stone from the ureter by incision through the rectum.

(*c*,) *Ureterotomy through the Vagina.*—Removal of stone by means of vaginal ureterotomy has been performed by Emmet and Cabot.

(*d*,) *Extraperitoneal Ureterotomy* has been performed in five cases by Twynam, Cabot, Ralfe and Godlee, Kirkham, Fenger. Fenger's case : Man, thirty-five years, increasing attacks of renal colic for two years. No hæmaturia, no tumour. Diagnosis, nephrolithiasis. Lumbar nephrolithotomy, no stone in kidney. Palpation showed two stones in ureter, one and a half inches below kidney. Longitudinal ureterotomy, no sutures, recovery.

(*e*,) *Intraperitoneal Ureterotomy* has been performed in two cases by Cullingworth and Arbuthnot Lane. In both cases ureterorrhaphy was done, and the sutures held.

The treatment of the ureteral wound is difficult in the extra- and intraperitoneal operations. In the intraperitoneal operations immediate, absolute closure of the ureter is of vital necessity ; as the urine above a stone is almost always infectious, the question of accurate suturing is one of great importance. In the extraperitoneal operation, where the infected urine can be drained out effectually until the wound closes, the question of suturing is of little import. The continuous silk suture has been used with perfect success.

Stones located low down in the true pelvis which cannot be pushed up within the reach of an extraperitoneal incision, like that for liga-

ture of the iliac artery, might be reached by a renal operation, although no case of this kind is as yet on record.

Laparotomy for the purpose of diagnosing the location of the stone has been of value in several instances.

In Twynam's case the exploratory laparotomy was absolutely necessary, since the symptoms pointed to stone in the left ureter, while the stone was found in the right ureter, and was removed three weeks later by an extraperitoneal ureterotomy.

REFERENCES.—[1] "John Hopkins Hosp. Bull," Jan. 1895 ; [2] "Centralb. fur Chirurgie.," No. 9. 1895 ; [3] "Annals of Surg.," p. 257, 1894.

URETER (Surgery of the). *A. W. Mayo Robson, F.R.C.S.*

Ureteral Anastomosis.—In removing a large myoma uteri, which weighed twenty-five pounds, and which had raised the peritoneum from the floor of the pelvis, I found that I had taken two inches out of the left ureter. Instead of performing nephrectomy, or establishing a ureteral fistula, I anastomosed the proximal into the distal end by splitting the lower end and drawing the upper into the lower, as shown in the diagrams (*Figs.* 49, 50).

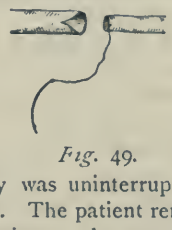

Fig. 49.

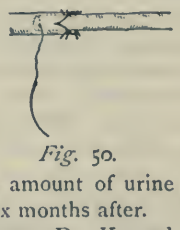

Fig. 50.

Recovery was uninterrupted, and the amount of urine was never diminished. The patient remains well six months after.

In a treatise on the surgery of the ureter, Dr. Konrad Büdinger[1] enumerates and criticises the various remedial measures suggested and practised by surgeons in cases of accidental division of the duct :—

(1,) Primary nephrectomy is condemned on account of the immediate risk, and because the operator cannot be sure that the second kidney is capable of doing the work of both.

(2,) An external ureteral fistula is very annoying to the patient, and may be the channel of septic material to the kidney.

(3,) Simple ligature of the renal end of the divided ureter gives rise to atrophy of the kidney.

(4,) Immediate union of the divided ends : (*a*,) By suture over a catheter ; (*b*,) By first invaginating one end into the other ; (*c*,) By tying the end of the lower portion and invaginating the upper into the lower through a slit in the latter.

(5,) Immediate implantation of the upper piece into the bladder or rectum. In the latter case there is grave risk of infection.

Implantation into the bladder promises good results. It is done by making an incision in the anterior wall of the bladder, then cutting a hole through the posterior wall, through which the ureter can be drawn and held in place by sutures.

Büdinger suggests a modification of this operation, which consists in first slitting the ureter for a short distance, then invaginating it through a small vesical opening and uniting the ureter and bladder near the opening by sutures, involving the serous and muscular coats only. The ureter is then laid in a furrow as it were by stretching two folds of the bladder wall over it by Lembert sutures.

The author has performed this operation experimentally on dogs with success.

Dr. Howard A. Kelly[2] describes a successful case of uretero-cystostomy performed for ureteral fistula in the vault of the vagina, following vaginal hysterectomy.

To secure an easy approximation of the free end of the ureter and bladder, the latter had to be dissected free from the pubic rami.

Kelly slits the lower end of the ureter for about four millimètres to avoid subsequent stricture of the orifice ; and to give stability to the parts while suturing he passes a fine pair of forceps through the urethra into the bladder and out the incision, taking hold of the ureter which is drawn through the incision and held steady.

Dr. F. Krug[3] reports a successful case of implantation of a severed ureter into the bladder.

The following method was employed : An incision about an inch and a half long was made into the vertex of the bladder. A fine catgut thread was then passed through the bladder wall below the incision, out at the incision, through the ureteral wall from without, inwards through the incision, and again through the bladder wall near the point of entrance. This was repeated on the other side, and the ureter being drawn through the incision by the two threads was split longitudinally for a short distance between the sutures. These were now loosely tied, thus suspending the end of the duct in the bladder.

The bladder incision was then closed by four tiers of running and interrupted sutures, the first two tiers including the mucous and muscular layers, while the next two brought the peritoneal investment together.

A permanent catheter was left to drain the bladder for four days, after which for some few days the patient was regularly catheterised.

Cystoscopical examination after convalescence proved the patency of the implanted ureter.

Dr. Howard Kelly[4] has recently performed three operations, on the completion of which he feared the ureter had been tied, as it appeared in each instance to be enlarged.

As the easiest solution of the difficulty he incised the ureter where it crosses the pelvic brim, and passed a small ureteral sound down into the bladder. In two cases the ureter had not been compressed, but in the third it was in the grasp of a ligature in the pelvic floor. On removing the ligature the sound passed easily.

For cases in which there is grave doubt as to whether the ureter has been tied or cut he strongly advises this diagnostic measure.

At a meeting of the Pathological Society, London, Dr. Voelcker[5] related a case of primary carcinoma of ureter. The seat of the new growth, which was formed of delicate villous processes (microscopically papillo-carcinoma) (villous cancer), was at lower two inches of left ureter.

There were secondary deposits in liver. He remarks that malignant disease of bladder was rarely followed by secondary deposits in the liver.

REFERENCES.—[1] "Archiv. fur Klinische Chirurgie," Band xlviii., Heft 3; [2] "John Hopkins Hospital Bulletin," Feb. 1895; [3] "Amer. Gynæcological and Obstetrical Journ.," Nov. 1894; [4] "John Hopkins Hospital Bulletin," Dec. 1894; [5] "Lancet," April 6, 1895.

URETHRA (Diseases of). *E. Hurry Fenwick, F.R.C.S.*

Cocaine Poisoning by Urethral Injection.—From the Macclesfield Infirmary[1] three cases are recorded in which, preparatory to dilating strictures with Lister's bougies, 20 minims of a 10 per cent. solution of cocaine hydrochlorate were injected with a small glass syringe down the urethra, care being taken not to injure the mucous membrane.

In all three cases within five minutes of the application alarming symptoms of collapse manifested themselves. The patients first complained of dimness of sight, became intensely pale, the pupils dilated, the forehead was covered with cold clammy perspiration, the respiration was gasping, and the pulse quickened. Hypodermically 20 minims of ether were injected, hot bottles were applied, and, as soon as the patients could swallow, diffusible stimulants were freely administered. In two of the cases nitrite of amyl in 5 minim capsules was used in addition, and recovery in consequence was much more speedy.

Urethra (Rupture of).—G. Chismore[2] reported a case of traumatic rupture of the urethra with restoration after thirty-six years.

The patient, aged forty-three, had at the age of six years tied a string about the penis near the scrotum in order to avoid wetting the bed at night. The constriction thus produced entirely severed the urethra and corpus spongiosum, and divided fully one-half of the corpora cavernosa. A perineal section was first performed, through which the urine was allowed to pass, and then the tissues of the old wound were denuded, precisely as is done in attempting to close an old torn perineum. The two ends of the urethra were then cut off squarely, a staff introduced, and then the severed portions of the corpora cavernosa were closely drawn together by means of a deep line of buried catgut sutures. Accurate approximation of the under surface of the urethra was obtained by three catgut sutures. No attempt was made to suture the upper or deeper half of the urethra. The corpus spongiosum was carefully sutured, and the integument then brought together. On the thirteenth day the catheter was removed, and the perineal incision permitted to close. The man now passed his urine entirely through the normal urethra, the severed ends of which had united so closely that the introduction of a bulbous sound failed to reveal the line of union.

Treatment of Foreign Bodies in the Urethra.—Guyon [3] classifies foreign bodies in the urethra as hard or soft. Hard bodies are detected by the bulbous bougie. They are mostly found at the penoscrotal angle. Soft bodies are detected by the endoscope, and may be extracted through this instrument by means of a long pair of forceps. When large, hard bodies, such as impacted stones, cannot be thus removed, the urethral forceps are conducted down to the seat of lodgement, and an effort is made to seize the body, guided only by the sense of touch. When the foreign body is lodged in the posterior urethra it should be pushed back into the bladder, where it may be crushed and the fragments evacuated. When stricture prevents extraction, dilatation may be accomplished by a permanent catheter in place of performing internal urethrotomy. Exceptionally external urethrotomy is required. Foreign bodies in the bladder are recognized by palpation of the bladder, by the bladder-searcher, by a lithotrite, or a cystoscope. When mobile they are usually found in the neck. When the foreign bodies are soft and not encrusted a lithotrite with flat blades serves an excellent purpose in withdrawing them. Very little liquid should be injected into the bladder in preparing for the withdrawal of these bodies. If the foreign body is in the bladder and is friable it may be broken and washed out, but if it is hard, either an effort may be made to withdraw it by special apparatus, or hypo-gastric cystotomy may be performed. Hair pins are readily removed from the female bladder

by introducing a blunt hook into the curvature of the pin. This may be done by the aid of a cystoscope. Brittle bodies are of course subject to lithotrity. Metal and wood are to be removed by section.

Urethra (Electric Illumination of).—Hermann G. Klotz[4] publishes a paper on Urethroscopic studies.

Papillary Excrescences: Vegetations.—Vegetations or papillary excrescences of the mucous membrane of the urethra, situated in or near the meatus, are of frequent occurrence, and as they can easily be seen and reached do not offer more difficulties to diagnosis and treatment than those commonly found in the sulcus coronarius glandis on and around the frænulum, and known as venereal warts or condylomata acuminata. They share, however, with these their neighbours, the tendency to obstinately return after having been removed by caustics or by mechanical means. Vegetations in the deeper portion of the urethra were first distinctly described by Vajda,[5] not observed, however, during life, but on the autopsy table. Vajda cites similar observations reported by Morgagni, Hunter, Rokitansky, Dittel, Tarnowsky, and others.

The literature on the occurrence of multiple new growths of the male urethra has been collated by O. Rosenthal,[6] who has published a minute description of a well observed case. The polypi in this case probably were not of a distinctly papillomatous character. Since then Oberländer has described in his numerous publications a "urethritis papillomatosa," stating the occurrence of multiple papillary excrescences along the urethra, and more recently F. R. Eversole[7] and F. M. Briggs[8] have published cases of papillomatous growths, the latter particularly presenting features quite similar to those observed by Klotz in two instances.

Case 1. A clerk, aged twenty-six years, contracted gonorrhœa for the first time in the spring of 1883. He was treated by injections, and later by applications of nitrate of silver and iodine through the endoscope. A year after first injection he again contracted gonorrhœa. A month later the acute symptoms had entirely disappeared, but warts developed on the lips of the meatus. About a week later the urethra was examined by No. 24 F. endoscopic tube as far as the bulbus without any difficulty. After removal of the obturator the field of observation was occupied by a whitish mass of irregular surface, which after cleaning and drying proved to be a cluster of papillomatous excrescences closely resembling condylomata acuminata. The entire pendulous urethra was found studded with numerous similar wart-like formations, which, either singly or in groups or clusters ('nests' of Rosenthal), principally occupied the lower surface, some,

however, growing from the upper aspect and from the lateral folds.

Three large clusters or tufts could be distinguished, one at the entrance to the bulbus, one about in the centre of the pendulous urethra, and one about two inches from the meatus, while nearer the orifice the warts became smaller and less numerous.

In several sittings the larger groups of warts were removed by means of the polypi guillotine.[9] The smaller ones were cauterised with a concentrated (50 per cent.) solution of chromic acid, and certain others by the ring-shaped curette. Three months later recurrence had taken place near the meatus. The recurrent growths were easily removed with the curette. Four months later no further recurrence had taken place.

Klotz is unable to agree with Rosenthal *(loc. cit.)* on the dangers from chromic acid. No bad effects will result as long as care is taken that none of the solution is allowed to flow upon healthy portions, but that it is confined to the papillary growths. This can easily be attained by using only very small cotton tampons or, better still, pointed wooden sticks like tooth picks, soaked with the acid. He has had good results from the treatment recommended by Oberländer, of rubbing off the warts by means of cotton tampons, but recommends the galvano-cautery as the best method.

In some cases the papillomatous growths have arrested the progress of olive pointed bougies, and led to a mistaken diagnosis of strictures of large calibre. Metal sounds of larger size do not meet with any resistance, although their passage may cause considerable pain and occasionally some bleeding. The discharge from the vegetations is usually but slight and little coloured.

Polypi.—Quite different in some respects from the papillary excrescences, larger, single new growths are occasionally observed in the male urethra, which from their more or less smooth surface, their shape, and benign character altogether, from their resemblance to similar formations found in other cavities of the human body, may well be designated polypi in the absence of a better, more strictly anatomical or histological name.

The favourite locality for the development of these real polypi seems to be the membranous portion according to Klotz, though others state the pendulous urethra to be the most frequent site. As a rule they cause very few symptoms except a continuous slight discharge, but on examination with bougies *à boule*, or even with the urethrometer, they may feign a stricture, while to steel sounds of large calibre they do not offer any resistance. The largest one removed by Klotz, after

having been in strong alcohol for some time, measured six millimètres in length and four millimètres in width at its base. They are removed by the polypi guillotine.

Angeioma Cavernosum.—Klotz describes a case in which No. 23 F. endoscopic tube about three inches long was introduced into the bulbus. On its withdrawal, when the middle of the pendulous portion was reached, suddenly the left side of the urethral wall bulged into view. The protruding portion of the mucous membrane was found to be of a smooth surface and a dark bluish colour, of the shape and size of a coffee bean, sharply defined at the base from the dark pink surrounding portions. The tumour was soft and easily yielded to the pressure of the tube, although on introduction it seemed to offer a slight resistance. On close inspection within the tumour a number of separate cords, separated by yellowish wide lines resembling the ring of a coil, could be distinguished, apparently representing dilated blood vessels, and imparting to the whole mass the character of a cavernous angeioma.

It is difficult to decide exactly whether this was really a cavernous tumour, or whether a pre-existing gap, or a localised thinning out or weakening of the tunica albuginea of the corpus cavernosum allowed the cavernous tissue itself to protrude and to form a kind of diverticle. The author is inclined to accept the former opinion, principally on account of the eminently sharp angle which the base of the protuberance formed with the adjoining portion.

The occurrence of such cavernous swelling is not without practical bearing, because any injury done to them may cause serious hæmorrhage. The swelling may be sufficiently palpable to produce the sensation of narrowing of the urethral lumen on examination with a bougie *à boule* or even with a urethrometer. Mistaken for a stricture, it might be made the object of internal urethrotomy, and thereby cause hæmorrhage, thrombosis, etc.

Croupous or Membranous Urethritis and Diphtheria of Urethra.—Klotz *(loc. cit.)* publishes three cases of this condition, and comments upon its rarity.[10]

In these cases more or less complete membranous casts of the urethra were seen, and either passed by the patient or removed, the subjacent mucous surface bleeding readily and presenting erosions in several places with fine red points.

The treatment consisted in the removal of the croupous membrane, and the use locally of iodoform, iron, silver, zinc, or other astringent and antiseptic applications.

Klotz also reports *(loc. cit.)* a probable case of cyst of the utriculus.

In one instance he has seen the colliculus seminalis forming a pea-sized protuberance of a bluish white colour, almost transparent, making the impression of a cyst filled with serum. On pressure with the edge of the endoscopic tube a considerable quantity of a clear, watery fluid was emptied into the urethra. A slight depression on the surface seemed to indicate the sinus prostaticus, or the orifice of the utriculus. The galvano-cautery was applied to the most prominent part of the swelling. At the next examination the colliculus appeared but slightly enlarged, with a utricular orifice the size and form observed in healthy persons. Klotz believes that in this case there existed a cystic dilatation of the utriculus, probably with the product of its own glands. Belfield [11] has recently called attention to the importance of this generally neglected organ. In the face of the great difficulties of examining this portion of the urethra, the author is somewhat reluctant to make the diagnosis of a cyst more positively. The application of the galvano-cautery was followed by great alleviation of the patient's complaints.

REFERENCES. — [1] "Brit. Med. Journ.," Sept. 28, 1895; [2] "Med. News," June 29; [3] "Annales Genito-Urin.," 1895, p. 97; "Therap. Gaz.," June 15, 1895; [4] "New York Med. Journ.," Jan. 26, 1895; [5] "Wiener medic. Wochenschrift," 1882, p. 1,029; [6] "Berliner Klin. Wochenschrift," 1884, No. 23; [7] "St. Louis Polyclinic," vol.i., Aug. 5, 1889; [8] "Boston Med. and Surg. Journ.," Oct. 24, 1889; [9] "Morrow's System," vol. i., p. 221; [10] see F. J. Brown, "Journ. of Cut. Dis.," vol. viii., p. 289, 1890; [11] "Journ. Amer. Med. Assoc.," April 21, 1894.

URETHRAL CARUNCLE.

Synopsis.—(Vol. 1895, p. 507.) **Torsion or Excision** may be adopted.

URINE (Incontinence of). (See "Locomotor Ataxia.")

URTICARIA. *P. G. Unna, M.D., Hamburg.*
Norman Walker, M.D., Edinburgh.

Abrahams[1] refers to the use of **Pilocarpine** in this disease. He ascribes the fact that it is not more used to three things: either there is some complicating eczema; or the diagnosis was wrong; or the drug was bad. An adult should get ⅓ to ½ of a grain daily, and children more in proportion, they being as a rule less sensitive to the drug. Before giving it up it should be pushed to the limit of tolerance.

Dr. Aourdeaux employs equal parts of **Lime Water, Laurel Water** and **Glycerine.** This is mopped on freely, and the results are said to be almost immediate.

Papon[2] uses **Antipyrin** in doses of 8 grains, four times a day, with much benefit.

Berliner[3] believes that scratching has a good deal to do with the

spread of urticaria. He suggests for treatment that each wheal should be moistened with **Cold Water** and then rubbed with a few grains of **Salt.** This is said to ease the itching. In fresh cases of urticaria he recommends the use of **Calomel.**

Brocq[4] recommends **Quinine,** accompanied by the treatment of any other disturbance which can be detected.

Sequira[5] records a case of urticaria, following the use of iodide.

Lanz[6] from personal experience finds that **Ichthyol** is the best remedy for certain forms of urticaria, caused by errors of diet.

REFERENCES.—[1] "Medical Record," Sept., 1894; [2] "Journ. de Med. de Paris," No. 2, 1894; [3] "Dermatol. Zeitschr.," 1894, part iii.; [4] "Revue General de Therap."; [5] "Brit. Med. Journ.," July, 1894; [6] "Revue Med.," Oct., 1894.

UTERINE THERAPEUTICS.

Synopsis.—(Vol. 1895, p. 510.) Ichthyol, or Sulph-ichthyolate of Ammonium, the former in 10% ointment or 20% solution, the latter 5 or 10% in Glycerine, seems to have given good results in the inflammatory conditions met with in gynæcological practice.

UTERUS (Displacement of). *Theophilus Parvin, M.D., Philadelphia.*

The subject of anterior colpotomy has recently occupied considerable attention, more especially by German operators. Among other contributions to the subject are two by Martin, one of these being a communication made to the German Gynæcological Society (June, 1895) and published in the "Monatsschrift für Geburtshülfe und Gynäkologie" (August, 1895), and the other to the British Medical Association, and published in the "Annals of Gynæcology and Pædiatry" (October, 1895). The former is the fuller. The operation has proved successful in cases which have hitherto been treated by abdominal sections, such as pyosalpinx, and some cases of cystic disease of the ovaries, and in this respect must be regarded as of great value, for we must remember, as shown by the careful statistics of Winter, about one-third of those who undergo laparotomy suffer from hernia as a consequence, this hernia in some cases not occurring for two or three years.

By anterior colpotomy a retroverted or retroflexed uterus may be restored to its normal position, even in cases of very firm posterior adhesions; after the restoration vaginal fixation may be employed, and usually is—but this topic will be referred to again. One of its most interesting applications is to the removal of myomata, whether pedunculated or mural, especially if the latter are situated in the anterior wall. So, too, in four cases anterior colpotomy has been successfully done in ectopic gestation. Martin states that he has

employed the operation in one hundred and sixty-nine cases of ovarian, and in one hundred and thirty-nine of tubal disease, and also in nineteen of retroflexed, and seven of prolapsed uterus; one of the four cases of tubal pregnancy was also his.

The following is his description of the method of doing anterior colpotomy: "The patient is placed in the dorsal position with the legs raised on either side. A speculum being introduced into the vagina, the uterus is fixed with a pair of forceps, invented by my assistant, Dr. Orthmann, a combination of a uterine probe and vulsella, which grasps the anterior lip of the cervix, so that one can draw down the cervical portion of the cervix to the vaginal introitus. Another pair of vulsella forceps should be fastened just under the orifice of the urethra, about three inches from the cervical opening. The anterior vaginal wall is pulled upwards, a fold is raised vertically, which is to be incised and peeled off laterally from the surface of the bladder and cervical body. Hard fibres will be seen above the vaginal insertion, which are to be divided. The upper border is to be then pushed upward with the finger, separating the loose tissue between the bladder and the uterus, so carrying the former up out of the way behind the pubic joint. Occasionally the bladder is distinctly made out, otherwise, never seen."

Two or three things are to be added. The lower forceps had better seize the vaginal wall at a point corresponding with the internal orifice of the urethra; Orthmann's instrument is by no means essential; a good tenaculum forceps will probably answer as well. Splitting the vesico-vaginal wall is done with the scalpel, and separating the bladder from the uterus will occasionally require scissors to divide firm tissues, and the operator during this process can avoid danger by keeping close to the cervix, the white appearance of which will be his best guide in knowing that he is not approaching the bladder.

At the Vienna Congress, in Martin's paper upon anterior colpotomy, vaginal cœliotomy was given as a synonym of this operation. This is certainly a new application of the latter word, which may plague, not its inventor, but him who has restored its use.

Winter's statistics of herniæ, consequent upon abdominal section, show, according to his statement at the same Congress, 23 to 30 per cent. suffering from this consequence; the statement from Chéron's journal was as previously given.

Operative Treatment for Retrodeviations of the Uterus.—Professor Rubeska, of Prague, gives in the October number of the "Monatsschrift für Geburtshülfe und Gynäkologie," an elaborate paper upon

the different operations employed for the cure of such positional disorders of the uterus. These operations are the Alquie-Alexander operation, a method that has never been received with much favour in Germany, ventrifixation, vaginal fixation, and shortening the utero-sacral ligaments. Incidentally, it is stated that Löhlein cured 18 per. cent. of chronic cases with the pessary, and Klotz had 25 per cent. of complete cure, 60 per cent. relative cure, and 15 per cent. remained without improvement, the same means being employed. Ventrifixation seems generally abandoned, at least in Germany, for vaginal fixation, the first suggestion of which was made by Sänger, in April, 1887. Several methods have been employed, the first being Schücking's, which has been abandoned because of the danger of injuring the bladder, and because of the uncertain results. Mackenrodt, after performing anterior colpotomy, as previously described, but not opening the peritoneal cavity, then stitched with silkworm gut, the uterus to the borders of the vaginal incision, the threads being carried through the uterus one or two centimètres above the internal os; the ligatures were removed in three to four weeks. The result not being entirely satisfactory, he modified his method by carrying the stitches higher up in the uterine wall, and then through the peritoneum of the vesico-uterine cul-de-sac. Other operators, however, open the peritoneal cavity, and stitch the uterus, three ligatures usually being used, the highest passing through the fundus in the vaginal incision, the stitch beginning on one side of the divided vagina, thence passing through the uterine wall, and through the opposite vaginal wall. The material used by Martin is catgut, but some use silk. The writer was informed, when recently in Berlin, that cases of stone in the female bladder were becoming less rare since vaginal fixation was being done so frequently, and the cause was said to be the employment of silk for this purpose, one or more ligatures having been passed through the wall of the bladder.

It must be confessed that the most rational method of treating posterior displacements of the uterus, that require, or are amenable to surgery, is shortening the round ligaments. Certainly ventrifixation, or vaginal fixation, is merely substituting one form of positional disorder for another; the uterus was intended to be mobile, and fixation of any sort cannot be an unmixed good.

Schauta, in the third part of his work, "Lehrbuch der Gesammten Gynäkologie" (this part just issued), states, after discussing the treatment of posterior displacements of the uterus by massage and by pessaries, that in case surgical means are required, he prefers vaginal

fixation if the uterus is moveable, but if there is disease of the appendages with firm adhesions posteriorly, ventrifixation.

We are glad to see that Schauta, as a few other European writers, does not use 'vaginofixation' and 'ventrofixation,'—there is neither vagino nor ventro in Latin—and compounds into which either of these enters are simply intolerable.

Discussion on Treatment of Uterine Retrodeviations.—At the Bordeaux Congress, Bouilly, of Paris, in an excellent paper upon the subject, claimed that in the majority of cases no operation is necessary, but that retrodeviations can be successfully treated by the pessary. The form of instrument preferred by him is a modification of Hodge's pessary, in which the posterior transverse bar is thicker than in the original. Doléris confirmed essentially the views of Bouilly.

Pichevin asserted that the wearing of a pessary undoubtedly succeeded in many cases, especially if the uterus was restored to its normal position soon after delivery. But these deviations were the cause of various disorders, the disorders being due : (1,) To metritis, which is in some cases, so intense, especially at the angle of flexion that there may sometimes be found considerable sclerosis ; (2,) To the existence of a sclerocystic ovary ; (3,) To the presence of slight uterine lesions, such as adhesions to the pelvis, to the rectum, and to the small intestine. It is then necessary to treat the metritis, and often to ascertain *de visu*, the condition of the appendages and of the peri-uterine tissues.

Dubourg, of Bordeaux, advocated dilating the cervix freely, and drainage, and after a time shortening the round ligaments. Posterior adhesions would require posterior colpotomy. Lesions of the appendages might require different methods of treatment, from dilatation and drainage, which in some cases will permit natural evacuation of large fluid collections in the tubes, whether hæmatosalpinx, hydrosalpinx, or pyosalpinx ; in other cases, removal, preferably by the vagina, of these tumours. Hysteropexia should be restricted to those cases in which laparotomy is required by serious lesions in the vicinity of the uterus.

Regnier, of Paris, advocated the treatment of uterine deviations by **Electricity,** his conclusion being drawn from successful employment of this agent, in fifty cases ; twenty to forty *séances* are required for complete treatment.

[The reporter was present at this Congress, and makes the preceding report partly from his own observation, and partly from the proceedings as published in French medical Journals.—T.P.]

UTERUS (Excision of). *E. de la Granja, M.D., Boston.*

Total Hysterectomy by a New Method. — Of those surgeons thoroughly conversant with abdominal surgery, but few will express a doubt of the greater value of total, over partial hysterectomy. At present, the only question for consideration is in the selection of method according to the circumstances of the case, and the greater safeguard that such selection will offer for the recovery of the patient. Everything being equal, preference should be given to the method offering the greatest simplicity, the minimum loss of blood, and requiring the shortest time and the least quantity of ether or chloroform, thereby avoiding the dangers of prolonged anæsthesia. Unless the circumstances of the case require a deviation of the general rule, total hysterectomy should be performed by the new vagino-abdominal method, as it is done at St. Omer Hospital, and where it originated with one of the surgeons of said institution; St. Omer Hospital having the proud record of "recovery" in all the cases therein operated upon, without a single "death" during the three years of its existence.

The instruments specially constructed and employed in the operation are an uterine stem (*Fig.* 51) and an elevating staff (*Fig.* 52). The stem is made of a single metallic piece, forming a central cone three-eighths of an inch in diameter, tapering down to one-fourth, and having a length of from one and three-fourths to two and one-fourth inches. It is hollowed to the depth of one inch with a central cavity, which is bored with a three-sixteenth inch drill, and reamed out to one-fourth inch at the orifice, ending blindly. The stem fits the uterine canal, and has for a base a disc (*Fig.* 53), made to fit over the cervix. The disc is circular, with a diameter of three-fourths to one and one-fourth of an inch; it is slightly convex on the distal, and deeply concave on the proximal side of the cone. In the edge of the disc a narrow groove is cut which serves as a director to guide the point of the

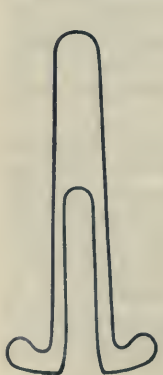

Fig. 51.—Section of Stem and Disc.

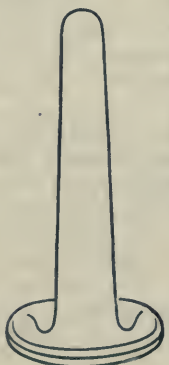

Fig. 52.—Stem and Disc.

Fig. 53.—Disc.

knife in the abdominal dissection. Another narrow groove, parallel to the edge of the disc, and within one-sixteenth of an inch of its convex border, is also cut, and perforated with six small holes at regular intervals, intended to receive the sutures to fasten the instrument to the cervix, should they be necessary, and which, after being tied, are protected by the groove.

The benefit of this appliance is at once manifest ; it makes the uterus firm, rigid and easily manipulated. The concavity of the disc forms a receptacle for iodoform or other antiseptic powder, and with the cone, strongly and hermetically seals the uterine canal, thereby preventing the discharge of septic material from the uterus, and allowing later on a more perfect sterilization of the vagina.

The preliminaries and operation as performed at St. Omer Hospital are as follows :—

Preparation of the Patient.—When, after a careful examination, the operation of hysterectomy is determined upon, the physical and constitutional condition of the patient is carefully noted, and if unfavourable, she is placed under proper treatment until the heart and kidneys have attained, as near as possible, the normal condition.

When the uterus is enlarged and filled with soft cancerous or sarcomatous material, or there are present profuse and debilitating discharges of a serous or bloody character, a preliminary curettement, followed by a few days' rest in bed, will result in the temporary improvement of the physical condition of the patient.

The day previous to the operation the patient, besides being subject to the usual preliminaries required in laparotomies, is given a warm bath, scrubbed with Castille soap, rinsed with a bichloride solution (1 in 5000) which is allowed to dry on, and dressed in sterilized clothing, is put to bed, with a bichloride pad over the abdomen, between sterilized bed-clothes. On the morning of the operation, rectal enemata of warm water are repeatedly given until the rectum is clear, after which, a vaginal douche of bichloride (1 in 1000) is administered. At the beginning of the operation $\frac{1}{4}$ grain morphine, $\frac{1}{150}$ grain atropia, and $\frac{1}{16}$ grain strychnia are given subcutaneously in one dose. The anæsthetic used is ether, often substituted by chloroform in the beginning of the anæsthesia.

Operation.—A short speculum is introduced into the vagina, the perineum depressed, the cervix exposed with the help of vaginal retractors, and drawn as far as possible into the introitus with tenacula forceps. A probe is now passed, and the direction, shape and size of the uterine canal determined. If the canal is not freely patent, it is thoroughly dilated and irrigated. If the character of the disease is

other than cervical cancer, the cervix is firmly held and a circular incision is made, simply cutting through the vaginal structures about the uterine neck, and sufficiently remote from the uterus to include within it all diseased tissues, as in the usual manner of performing vaginal hysterectomy. In most cases this is comparatively simple, but, with a large tumour and a rigid, narrowed and elongated vagina, it is a matter of great difficulty, and, contrary to what might be expected, little help will be gained by the incision of the sphincter vaginæ.

The uterus is now separated from its anterior and posterior attachments and coverings as freely as possible by means of the finger or the handle of a scalpel, and the cut margin of the vagina caught with forceps and loosened sufficiently to allow it to be drawn together and sutured. A line of continuous suture is taken about one-quarter of an inch from the cut margin, like the ordinary purse-string suture, except that the first stitch, which is placed at the back, is carried around the vaginal artery. The suture is drawn so as to leave both ends of even length in the vagina, the threads crossed, and one side of stitches taken with one end, and the other with the remaining end. In this manner the principal vessel is caught in a loop, and when the ends of the suture are drawn tight, not only is the vault of the vagina closed in, but any tendency to hæmorrhage from the vaginal artery is obviated.

The uterine stem is then inserted and forced into place after filling the disc with iodoform, firmly holding the cervix during this procedure by means of a pair of tenacula forceps fixed into the anterior and posterior lips.

If the case is one of cervical cancer, the stem must be inserted before any incision is made, and the contents of the uterus and infective parts hermetically sealed by sewing the vagina to the edge of the metal disc with sutures taken through normal vaginal structure, sufficiently remote from the cervix to include all diseased tissue, proceeding after as above described for non-infective cases.

The staff is now inserted into the central cavity of the uterine stem and held in place by an assistant; the parts are sponged clean and dry; a tampon of iodoform gauze packed into Douglas' pouch, under the peritoneum and between the cervix and bladder: and the ends of the purse-string-like suture drawn tight and tied, closing in the vault of the vagina below the cervix, gauze and uterine stem, except for a small opening through which the staff passes. In exceptional cases, already mentioned, not only is this careful toilet of the vagina very difficult, but unnecessary and time consuming, and should be omitted.

The patient is now placed in the Trendelenberg position. The peritoneal cavity is opened at the superior angle of the wound in

order that the position of the bladder may be determined before the opening is completed and injury to it avoided, and the incision carried close to the pubes to gain as much room as possible for working in the pelvis.

If the case is a simple enlarged uterus with appendages approximately normal, the tumour is drawn out of the wound and to one side; the fold of broad ligament, including the tube and ovary of the other side, is put on the stretch and a row of sutures passed below the ovary, from close to the side of the uterus to the free margin of the ligament, so as to include the ovarian artery. This line of sutures is inserted by means of a perineal needle, is taken in the fashion of a shoemaker's stitch, but each stitch—which includes but a small amount of tissue—is drawn tight, and secured by taking a turn of the loose end of the suture about the other, so as to form a series of single knots. The uterus is then pulled over to the other side, and the remaining tube, ovary, vessel and ligament secured in the same manner.

The ligaments are cut away above the ligatures, and between the points of their excision across the uterus in front, and back about an inch above the attachment of the bladder anteriorly, and an inch above the cervix posteriorly the peritoneal covering of the womb is incised.

With the help of a scalpel handle, the bladder and peritoneum are now rapidly dissected up from the uterus in front until the line of former vaginal dissection is reached; the posterior layer of peritoneum is treated in the same manner; the sides of the uterus are freed from peritoneum as much as possible, when the lateral attachments, including the uterine artery, can be easily clamped, and the organ cut away and removed.

During the dissection an assistant holds up the uterus firmly by means of the staff, which shortens and defines the neck, and enables the operator to quickly and easily perform what is usually the most difficult part of the operation—the enucleation of the cervix. The gauze packing acts also as a guide, and is of material assistance during this dissection. The uterine vessels are firmly ligatured with kangaroo tendon, the clamps removed, and all oozing of blood from the pedicles stopped by suturing.

The anterior and posterior peritoneal flaps are brought together; the cut edges are turned in so as to bring the serous surfaces into contact, and the stumps containing the ovarian arteries are folded in at the angles so as to become extra-peritoneal, the whole being closely united by a line of blind sutures, which, when drawn tight, are

situated outside of the peritoneal cavity. All clots are removed by dry sponging, the abdominal wound closed layer by layer with animal ligature, and finally sealed with cotton and collodion.

The advantages of the vagino-abdominal method are:—

Over the vaginal method, simply:—(1,) The peritoneal cavity is completely closed and left with no raw surface for subsequent adhesion with viscera; (2,) Primary union is the rule, and convalescence rapid; (3,) The subsequent complication of rectocele or vesicocele is greatly minimized; (4,) The uterine vessels can be perfectly secured in all cases, and there is no danger of secondary hæmorrhage; (5,) Tubes containing pus, and ovaries, are more completely removed.

Over the abdominal methods:—(1,) Complete sub-peritoneal drainage can be established; (2,) The length of time which the peritoneal cavity is exposed is greatly reduced by the previous vaginal dissection, and shock is consequently diminished. (A large uterus can be removed in from twenty to thirty minutes); (3,) The limits of the cervix are closely defined, and the necessary extent of the dissection readily determined; (4,) The asepsis is more complete, and there is less danger of subsequent infection.

Over both:—(1,) The dangers of hernia are reduced; vaginal over the vaginal method; ventral over the extra-peritoneal treatment of a constricted stump; (2,) Danger of injury to the ureters is avoided; (3,) The manipulation is easier in the most difficult parts of other operations; (4,) There is less danger of injury to the bladder and other viscera; (5,) Hæmorrhage from the vaginal artery is avoided; (6,) The operation is practically bloodless; (7,) It offers a means for removing large uterine tumours with extensive adhesions, which could only be done with great difficulty, or not at all by the other methods; (8,) Its closer adherence to the principles of modern aseptic surgery.

VAGINA AND UTERUS (Surgery of). *John W. Taylor, F.R.C.S.*

Vaginal Cœliotomy and Vaginal Fixation of the Uterus.—This operation, for the introduction of which Dr. Dührssen is mainly responsible, has already achieved a wide popularity, and is being performed with considerable frequency and success in Berlin, Paris, Dublin, Birmingham, and Manchester.

The method of operating, in which I mainly adhere to that of Dr. Dührssen, is as follows: The patient is anæsthetized and placed in the lithotomy position; the labia are shaved, and the vagina is thoroughly disinfected, the operator and any assistant thoroughly washing and disinfecting as for an abdominal section. With an Auvard's speculum resting on the posterior vaginal wall, the anterior

lip of the cervix is seen, seized with volsella, and drawn down to the vulva. A metal sound of fair size (No. 9 or 10) is passed into the bladder, and after turning the point down to mark the lower limit of the bladder, the beak is reversed and held up by an assistant, while the operator makes a short transverse incision a little above the line where the anterior vaginal wall joins the cervix.

The centre of the upper border of this incision is then seized with volsella and drawn sharply upward by the assistant, so as to draw vaginal wall and bladder away from the cervix. The incision is now deepened and enlarged on either side by scissors, the connective tissue between the cervix and bladder is opened, and the bladder is bluntly separated from the anterior aspect of the cervix by the finger. When this has been done, the sensitive part of the finger applied to the anterior uterine wall usually becomes conscious of a thin membrane sliding between the finger and the uterus at the highest and deepest part of the wound. This is the anterior fold of peritoneum between the uterus and bladder, the "plica-vesico-uterina," (or the tissue immediately beneath it), and by keeping the finger closely applied to the cervix and gently drawing the finger downwards, this fold may be brought to the surface of the incision, or sufficiently near to the surface to be secured by catch-forceps. I usually apply two pairs of forceps, just as in abdominal section, and open the plica between them ; sometimes it is more convenient to use a single pair of forceps and divide the tissues to one side of these. If the peritoneal cavity has been opened, a gla ce at the parts will show it ; if, as sometimes happens, the somewhat membranous connective tissue just below the plica has only been seized by the forceps, another attempt must be made to draw down the plica, and this will be found immediately above the previous incision.

As soon as the peritoneal fold has been opened, the opening is enlarged by the fingers, and the short anterior blade of a Simon's speculum is passed inside the peritoneal cavity above the fundus uteri. The intra-pelvic anterior surface of the uterus is now plainly visible. The anterior uterine wall is seized at its highest part by volsella, and the fundus is drawn forwards and downwards. Before the latter is done, any posterior speculum-blade (which has been resting behind the cervix) is temporarily withdrawn, and as the upper part of the uterus is pulled forwards, the cervix is pushed back. By this double action the uterus is turned or twisted forwards, and in favourable cases the fundus may be pulled quite out of the incision at once. Sometimes the highest accessible point of attachment for the volsella is at first below the fundus. When this is the case, by

traction on the volsella a higher point of the anterior uterine wall is brought into view and may be seized by other volsella or by the passage of sutures, and so on, until the fundus can be reached and the uterus drawn forwards and downwards out of the pelvis.

This "delivery" of the fundus out of the incision is the necessary preliminary to any operation on the uterine appendages, and occasionally, when the uterus is large, it is a matter of some difficulty. The size of the uterus is an important factor, and should be carefully estimated before the operation is begun.

When the only object of the operation is to fix the fundus forwards, as in cases of simple retroversion, there is no need to obtain full delivery of the fundus, and, following the example of Dührssen, I have sometimes secured the fundus by sutures to the anterior vaginal wall without entirely turning the uterus out of the pelvis. This, as I have already stated, is essential for operations on the adnexa, and it is not until it has been effected that the conditions are analogous or comparable to those obtained by abdominal section, when the incision of the abdominal wall has been completed.

The condition when "delivery" has been fully effected, is as follows: The whole of the upper part of the uterus is lying between the labia at the vaginal entrance—in the hand of the surgeon. On either side the Fallopian tubes are seen extending from the uterus into the pelvis, and sometimes an ovary, if there are no adhesions, is resting a little way back on the posterior surface of the uterus. The uterine ends of the Fallopian tubes are directly under command of sight and touch, and, by following the tubes into the pelvis with finger or forceps, the fimbriated ends and ovaries are discovered and explored. Such is the method of vaginal cœliotomy. The lower part of the abdominal cavity is now open, and various operative measures may be carried out, such as: The separation of adhesions, the removal of diseased ovaries, or of a small ovarian cyst, of a recent tubal pregnancy, or igni-puncture of the ovaries, or salpingotomy.

It would be beyond the province of this paper to enter fully into the details of all these operations. It may suffice to mention as limitations inherent to this method, that lateral adhesions and adhesions above the pelvic brim are very difficult or impossible to detach, and that cystic tumours above the pelvic brim need evacuation or rupture before they can be removed.

At the close of any of these operations the uterus is returned into the pelvis, the divided peritoneum may be accurately closed, and the vaginal wound sutured by hardened cat-gut sutures. In most cases,

however, after the return of the uterus into the pelvis, the operation is completed by—

Vaginal Fixation of the Fundus.—A silkworm-gut suture is entered a little to one side of the middle point of the upper border of the vaginal wound (already noticed as the point for insertion of volsella), the same suture is carried somewhat deeply through the fundus uteri and out again through the vaginal wall at a point equidistant from the centre and opposite to the point of entrance. One or more sutures are passed in a similar manner below the top suture. When these are tied they necessarily bring together the sides of the transverse wound in a vertical direction, and plug or pad the deeper parts of the wound with the anterior wall of the uterus. The rest of the incision is brought together in a similar manner without enclosing the uterus –sometimes the whole of it may be united in a vertical direction; more frequently (as the lower border is somewhat fixed by the cervix) the lower end has to be united transversely and a T-shaped wound results.

In most of my own cases I have purposely *not* included the peritoneum in the fixation sutures, but have turned the peritoneal edges inwards, believing that by doing so I obtain a firmer and more lasting union of the anterior surface of the uterus to the vaginal wall and subjacent tissues. Dr. Dührssen and most of the German operators include the peritoneum in the fixation sutures, and accurately close the peritoneal edges below these.

At the end of the operation the exact position of the uterus is verified by bi-manual examination, the vagina is washed free from any blood or blood-clot, and a light pad of iodoform gauze is placed in the vagina and left resting against the wound.

When the operation is undertaken for chronic retroflexion of the uterus associated with chronic metritis, prolapse or protrusion of the vaginal wall, and old rupture of the perinæum, accessory operative work is often needed, and this may be done at one sitting. Curetting, perinæorrhaphy, and sometimes amputation of the cervix may be valuable adjuncts to treatment, and, when necessary, should be performed at the same time as the fixation. The fixation sutures are allowed to remain for six weeks or longer. Their removal is sometimes a rather difficult matter.

VARICOCELE. (See also "Veins, Diseases of.")

Synopsis.—(Vol. 1895, p. 516.) Resection of veins. Cold Douches containing Tannin, 1%, to scrotal and perineal regions are useful as a palliative measure, together with use of Suspensory Bandage and attention to bowels.

VARICOSE VEINS. (See "Veins, Diseases of.")

VARIOLA.

Synopsis.—(Vol. 1895, p. 517.) **Mercurial Baths and Inunctions**—baths from 33 to 35°C., for fifteen minutes each, containing 10 grains **Corrosive Sublimate** dissolved in **Alcohol**; they are given twice daily until temperature definitely falls, or to end of suppurative stage, after which one bath in twenty-four hours is enough. When crusts fall, a simple bath containing **Boric Acid**. Head and face are covered by **Muslin Bandages** dipped in **Sublimate Solution**, 50 centigrammes to the litre, and wetted frequently without removal. Finsen keeps patients in room with red curtains tightly drawn, or red window glass, to avoid effects of light on pustules.

VEINS (Diseases of). *Priestley Leech, M.D., F.R.C.S.*

TREATMENT *by Suture.*—The arrest of bleeding by stitching the cut surfaces together is a very old method which has been somewhat neglected since the introduction of ligatures. Dr. Ball[1] uses this principle in excision of the breast, and rarely applies a ligature. He proceeds as follows: Four or five deep sutures are passed entirely under the wound cavity, and before closing these the edges are brought accurately together by a fine continuous suture, no drainage tube being used; the deep sutures are now firmly closed over lead plates, and usually bleeding is absolutely stopped.

In varicocele he operates in the following way: An incision 1½ inch long is made over the cord, and completely exposes the plexus of veins. The vas is carefully separated from the mass of veins, from close to the external abdominal ring down to the epididymis. This can readily be done through the small incision by drawing out the cord in a loop. Clamp forceps are now placed on the mass of veins, one pair at the top of the scrotum and another pair close to the epididymis. The portion between the forceps is now cut away leaving ¼ inch projecting beyond each forceps. The two cut surfaces are then brought together by a continuous suture of the finest catgut; commencing at one edge the needle is passed through the entire thickness of the cut surfaces at very short intervals until the other edge is reached. The suture is then brought back in the same way to the starting point, and the two ends tied firmly together. The forceps are removed, and if the sutures are properly applied no bleeding takes place. The scrotal incision is closed by continuous catgut suture, so as to include all the divided fascial coverings of the cord. No drainage is necessary. By this method the cord is permanently shortened.

A similar method is applied by Ball to nævus. It can be applied to almost any nævus which could be treated by ligature. Long glovers' needles threaded with boiled silk are passed under the nævus; each

needle is entered a quarter of an inch from the margin of the nævus, under the growth, and out a quarter of an inch beyond the growth on the opposite side. The needles are passed parallel to one another at distances of about half an inch apart, and extend from one extremity of the nævus to the other. An elastic ligature is then tightened underneath the needles to temporarily arrest bleeding. An elliptical incision is then made down to the needles, leaving a healthy margin of skin all round. The elastic ligature is taken off, the silk threads rapidly pulled through, and the sutures firmly closed. If any bleeding comes from any point between the sutures a few additional points of suture can be passed by a curved needle. The advantages of obtaining a clear linear scar, healed in a week, over the slow sloughing away of a nævus, are obvious.

For varicose veins an incision is made over the section of vein intended to be excised. The vein is caught by two pairs of catch forceps, divided between them and dissected free to the upper and lower limits of the incision. A series of deep silk sutures are now passed under the wound, the one at each angle passing under the vein ; these two sutures are tied first ; a continuous fine catgut suture is applied to the edges of the wound, and afterwards the other deep sutures are closed so as to completely obliterate the wound cavity. The deep sutures may be removed about the fifth day.

Another application of this method, which Dr. Ball does not mention, is in the treatment of hæmorrhoids. Where there are only one or two hæmorrhoids which require removal the following method is very useful. A Smith's clamp, as used in cauterising piles, is applied to the hæmorrhoid which is to be removed ; the clamp is screwed up tightly and the pile removed by scissors or scalpel so as to leave a portion of it projecting beyond the surface of the clamp. A continuous suture of fine catgut is then applied so as to completely close the open cavity ; the clamp is removed and a morphia suppository introduced into the rectum.

Wounds in large veins, *e.g.*, the subclavian, may be closed by a continuous suture, provided they are not too extensive.

The treatment of varicose veins by means of a Martin's bandage is not always satisfactory. Trendelenburg[2] proposed ligature with excision of a portion of the vena saphena magna. This operation has now had a more extended use, and Faisst[3] gives the results of the operation as performed in Brun's clinic. In all cases the pain was relieved and many of the ulcers healed; the varices, however, did not altogether disappear, but were by no means so pronounced as before. Some one hundred and seventy-six cases were

published last year, and out of one hundred patients eighty-five at least had remained for six months free from pain and swelling. He is a warm advocate of the operation. Winiwarter[4], says Trendelenburg's method marks a distinct advance in the treatment of varicose veins, since a radical cure is accomplished by it. In some cases the enlarged veins, more peripherally placed, are also removed.

Landerer, accepting the explanation given of varicose veins by Trendelenburg, has contrived a bandage which is applied to the vena saphena magna so as to control the circulation in it. The bandage resembles a garter, with a parabolic spring carrying a cushion filled with water or glycerin, on its inner surface. The pad is placed directly upon the great saphenous vein. If the disease extend higher the band must be placed above the knee. The curve in the spring supporting the cushion prevents any pressure at one or the other sides of the vein. The band should be loosely applied so that the finger can easily pass beneath it; thus the circulation in the leg is not interfered with but only that in the vein. If the disease extend as high as the fovea ovalis, where the saphena empties into the crural, a bandage such as is used in crural hernia should be applied. One hundred cases have been treated in Landerer's clinic by this new method with satisfactory results. The band is light and easily applied; perspiration is not hindered, œdema, pain, and the uncomfortable sensation in the distended veins disappear. Eczema and ulcers heal more rapidly, and even while the patient is about his work. The band is cheaper than an elastic stocking and can be worn daily for a year; the glycerin filling needs renewal only once every three or four months, and the water filling every six weeks. Even if only palliation of the condition is secured the patient is highly satisfied with the improvement.

M. Delore of Lyon[5] says the spontaneous cure of varices is brought about by phlebitis, and that the surgeon should seek to bring about an artificial cure by the same means. He advises the injection of **Iodotannic Solution** which causes a slight degree of phlebitis. As a rule, a single injection is sufficient.

REFERENCES.—[1] "Practitioner," June 1, 1895; [2] "Medical Annual," 1893; [3] "Beiträge zeit Klin. Chirurgie," Bd. xiv. Heft. 1; [4] "Rev. de Thérapeutique," Jan. 18, 1895, quoted in "Therap. Gaz.," Mar. 15, 1895; [5] Congrés Fran. de Chirurgie, report in "Rev. de Chirurgie," No. 11, 1894, p. 918; Landerer's pad, vide Dr Robitzsch in "Deutsch. med. Wochenschrift," No. 34, 1893, quoted in "Annals of Surgery," Aug., 1894.

VERMES NASI. (See "Peenash.")

VESICULITIS (Seminal).

Synopsis.—(Vol. 1895, p. 519.) In simple acute cases **Rest, Opiates, Hot Poultices** to the inguinal region on side affected; perineal incision or **Aspiration** may be required; support testicles and treat gonorrhœa; no injections. In chronic cases, **Tonics, Digital Pressure** along affected vesicle once a week, not more than every fourth day; prohibit sexual intercourse. **Extirpation** in tubercular cases.

VOMITING.

Synopsis.—(Vol. 1895, p. 520.) **Nitro-glycerine** has been used by Humphries in all forms of vomiting with much success, except in peritonitis, where it aggravated, although this effect soon passed off, and in tuberculosis, in which it was ineffectual.

VULVO-VAGINITIS.

Synopsis.—(Vol. 1895, p. 521.) Vaginal injections of **Potass. Permanganate**, 1 in 4000, increased to 1 in 1000, are best, and are injected through a male rubber catheter.

WARTS.

Synopsis.—(Vol. 1895, p. 521.) Morison uses an ointment of **Bichloride of Mercury, Salicylic Acid and Collodion.**

WHOOPING COUGH.

Synopsis.—(Vol. 1895, pp. 28 and 522.) Baron uses **Quinine**, especially if acute lung complications exist; $\frac{1}{8}$ gr. hydrochlorate is used for each month of age, and $1\frac{1}{2}$ grs. for each year, the dose being given at 6 a.m., and at 2 and 10 p.m. Usually no more than $6\frac{1}{2}$-gr. dose for children over four years is required. In infants: ℞ Sulphonal, gr. j; Creasote, ♏ 2; Syr. Tolutani, Aq., āā ℥ij; M. et ft. mist. *Sig.*—2 teaspoonfuls every two hours. **Bromoform** may be given thus: ℞ Bromoform, ♏16; Sp. Rect., ℥ij; Glycerini, ℥xij; Tinc. Cardamom. Comp., ℥ij; M. in the order given. *Sig.*—A teaspoonful every six hours. N.B.—As the drug is very insoluble, the last dose may be inordinately strong. **Nitrite of Amyl** has been used to check paroxysms: ℞ Amyl Nitrite, ♏24; Alcohol, ℥iij; Glycerine, q.s. ad ℥j; M. *Sig.*—A teaspoonful for a child ten years old is said to relieve spasm if given immediately before it. The inhalation of **Ethyl Iodide** has been advised.

WRY NECK (Operative Treatment of). *Priestley Leech, M.D., F.R.C.S.*

Mikulicz advises almost total removal of the sterno-mastoid in cases of wry neck; the posterior and upper part, which is traversed by the spinal accessory nerve, alone being left. He has done this operation in seventeen cases with success; the only bad result was disfigurement of the neck caused by the absence of the muscle. From an examination of the removed muscle in these cases he has come to the conclusion that wry neck is the result of a chronic inflammation (myositis fibrosa), and in congenital cases he thinks it is due to compression of the muscle during prolonged and difficult labour, and not

to a laceration of the muscle. So called hæmatoma of the sterno-mastoid is due not to effusion of blood, but to thickening and induration of the inflamed muscle.

REFERENCE.—"Centralblatt. für. Chirurgie," No. 1, 1895.

XANTHOMA.

Synopsis.—(Vol. 1895, p. 523.) Fox employed a current of 1 to 3 milliamperes for the destruction of patches of xanthoma palpebrarum. Besnier treated two cases with **Phosphorus.**

YELLOW FEVER.

Synopsis.—(Vol. 1895, p. 523.) Salicrup advises 10 to 15 grs. **Calomel** if seen on the first day, following this up with **Saline Cathartic**, and as soon as this begins to act give a cupful of hot **Lemonade**, with 5 to 10 grains **Bitartrate of Potash** every hour until perspiration is free; keep this up by constant use of the lemonade and confinement to bed for two or three days, when fever usually subsides; no food is given during this time, but small pieces of ice may be allowed to quench thirst. In third stage, to check vomiting, give pieces of **Ice** to be swallowed entire, **Iced Champagne**, **Effervescing Mixtures** prepared with fresh lemon-juice, sulphuric and hydrochloric lemonades and diluted hydrocyanic acid. **Salicylates of Sodium** and **Potassium, Benzoate of Sodium,** and **Quinine** have been used in cases of inflammatory type. **Castor** or **Musk** for nervous disturbances. If stimulation is required, **Alcohol** may be combined with **Cinchona Bark.** **Salicylic Acid** and its preparations have been used prophylactically, in doses of 5 grs. three times a day.

PLATE XVII.

Röntgen's Method of Shadow Photography.

By E. HURRY FENWICK, F.R.C.S., *with additions by* J. W. GIFFORD, *and notes of a case of excision of the wrist as seen by the new rays, by* J. LYNN THOMAS, F.R.C.S.

No record of the progress of the year could be considered complete that omitted reference to the remarkable development in photography, or "shadowgraphy," or, perhaps still more correctly speaking, "electrography," made by Professor Röntgen, of Würzburg. His discovery is so recent that it would be rash to prophesy what results may ultimately be expected from its use. Nor would it be wise to predict how far it will aid the physician and surgeon in the clearing up of doubtful diagnosis, and in the avoidance of dangerous exploratory operations.

It seems to have been assumed that the medical profession was the one which would of all others benefit most by this discovery, and undoubtedly it may be of great use in a restricted field. In the first place the apparatus which will give results with an exposure of four minutes is complicated, expensive, and would require special technical skill in its manipulation. (The apparatus used by Mr. Gifford, as given below, entails a cost of between £50 and £60.)

Even with induction coils giving a six-inch spark, results appear to be very uncertain, and yet if it were proposed to introduce even so feeble a light as this into one of the cavities of the body it would be necessary to insulate the wires going to the Crookes' tube in a very effectual manner.

Nor must it be forgotten that the result is not a photograph, with clear outline and detail, but a shadowgram, whose edge will be blurred and ill-defined in proportion as the photographic plate is removed from the object throwing the shadow, yet in few places will this be less than one inch. As bone is opaque to the X rays, the use of this discovery will not be at present available just where we most need it, in the thoracic and cranial cavities.* Even in the lower abdominal and pelvic regions it will be hard to throw the shadow of a calculus or other morbid body so that it shall not be lost in the shadow of ribs, vertebral or pelvic bones.

* An attempt to photograph an egg has entirely failed, the shell proving opaque to the rays, and only the texture of the shell appearing. This may bear upon the subject of cranial photography, but the results may be different under more lengthened exposure.

Yet it has already been proved that this method can indicate the position of such bodies as bullets, needles, and sequestra in a limb, and thus greatly assist in their removal.

Moreover, bony outgrowths have been shadowed, and thus diagnosis assisted, and it is even said the nature of a bony deformity has been cleared up, and the extent of the operative interference indicated. But it is in the absolute diagnosis of calculi, both biliary and urinary, that most is to be hoped. Already a calculus has been revealed in the bladder, but here the sound, the cystoscope, and the finger leave but little room for improvement.

But with renal calculus it is quite another matter, for it repeatedly happens to the most experienced general surgeons to cut down on a kidney and fail to find the stone, which has been subsequently removed by another surgeon at a later operation. Again, much irreparable damage is often done to a kidney, even by skilled operators, in their efforts to find a stone, which is deeply imbedded in the cortex and unfeelable by palpation. It would, then, be of incalculable value could we not only speak with certainty of the existence of a stone, but even indicate its position in the kidney. We must not, however, be too sanguine of ultimate success in renal photography, even when the method has been so far improved as to penetrate through such a thickness of the body wall, because the ribs and the spinal column surround this organ very closely, and the dark shadows the osseous structures cast may be a source of fallacy. The difficulties we have already indicated appear to apply especially to the kidney, and warn us not to be too sanguine.

It may be possible in the future to figure a gall-stone in the gall-bladder, or duct, or in the intestine, but we have yet to discover the opacity of the fæcal masses which would mar our diagnosis.

We must therefore necessarily conclude that the time has not yet come to say how great will be the utility to the medical profession of what is distinctly a new field in physical science.

We are greatly indebted to the courtesy of Mr. J. W. Gifford, of Chard, for the four examples of this work which appear in our pages, and to Mr. J. Lynn Thomas for notes of his very interesting case of excision of the wrist.

Case of extensive excision of the wrist, "electrographed" one year after operation. *J. Lynn Thomas, F.R.C.S., Cardiff.*

The following notes were taken on December 14, 1894, and January 12, 1895, on Dr. Pritchard's patient, and are of particular interest in connection with the "electrograph" taken by Mr. Gifford, on February 8, 1896, of the present condition of the hand (*Plate XVII, Fig. A*).

Mrs. W——, aged forty, has had "diseased bones" in her right wrist for thirteen years. She has two sinuses discharging sero-pus, one on the hypothenar eminence, and the other on the dorsal surface of the first interosseous space. There is much thickening, and great deformity in the region of the carpus, and there is free lateral gliding movements at the wrist joint.

On January 11, 1895, I performed excision by Ollier's incisions, and removed *all* the carpal bones, about half the lengths of the four metacarpal bones, and the whole length of the metacarpus of the little finger, leaving only its articular surface; also the lower end of the radius and ulna. The trapezium was a sequestrum; the lower end of the thumb-metacarpus was bulbous and was excised, and a counter opening for drainage of the pocket left was made in the outer part of the thenar eminence. The hand was immersed for about ten minutes in an antiseptic solution, then dressed and put on a Lister's splint.

Present condition.—Mrs. W—— states her hand is most useful, the interossei (except the little finger) act well. She can flex and extend her hand upon the radius and ulna; can do her household work; and she can also write with it. She cannot use a needle, and the explanation is evident by studying the electrograph. The electrograph very clearly shows the displacement of the whole metacarpal region towards the ulnar side; the apposition of the upper ends of the metacarpal bones of the index finger and thumb, and the absence of that of the little finger; it also shows the region of the false-joint below the radius and ulna. The interspace between the radius and ulna is quite distinct.

It will be noticed that there is want of definition of the lower ends of radius and ulna, and of the excised ends of the metacarpal bones; this is no doubt due to what we know already of the pathological conditions of such parts—that is, they are filled in with dense connective tissue (hence translucent to the X rays). The plate was exposed ten minutes. *Fig. A* is copied from a photographic print, and the dark outline of the metacarpal bones was slightly intensified.

In addition to the interest of this being the first recorded case of an excision of the wrist electrographed, there is also the additional surgical one, that a very useful hand has resulted after quite an extensive removal of bones.

There can already be no doubt that the "new photography" will be of value in diagnosis of lesions and deformities of the extremities, and one cannot but hope that some of the obscurity of diagnosis of bone lesions about the elbow will be cleared up before very long, by means of this adjunct.

Fig. B shows Mr. Lynn Thomas's own left hand, taken on February 7, with ten minutes' exposure, the detail in the negative being remarkably good.

Plate XVIII, Fig. A, shows the hand of Mr. Higgins, the photographer, of Chard. In 1854, this gentleman sustained an accident that crushed the end phalanx of the middle finger, and the shadowgraph shows the destruction of bone very clearly, though some amount of definition has been lost in the printing block.

Fig. B is a female hand with a tubercular fore-finger, discharging pus, which has somewhat obscured the negative. The exposure in this case was eighteen minutes.

The Source of the X Rays.—From Professor Röntgen's account we are led to suppose that he used a large induction coil, to the terminals of which his Crookes' tube was attached. Mr. A. A. C. Swinton, who in England has repeated and confirmed his experiments, was not successful with so simple an apparatus, but used a current from the street mains passed into a transformer, with a spark gap between its high-pressure terminals. This transmitted an alternating current of 20,000 volts pressure to a battery of twelve half-gallon Leyden jars, and these discharged through the primary circuit of a Tesla oil coil, and it was with the secondary circuit of this that the Crookes' tube was connected. The exposure of the plate here was four minutes. Mr. J. W. Gifford, who obtained some of Professor Röntgen's results, but differed on several points, uses a hand dynamo yielding 150 Watts connected to a ten-inch spark induction coil by Apps, and to this the Crookes' tube is directly fitted.

It is from these Crookes' tubes that the X rays emanate, but it must be clearly understood that they are not visible, nor are they believed to be those cathodal rays investigated by Lenard in 1894. Mr. Gifford differs here, contending that they are these very rays. However that may be, they are able to penetrate substances of lesser density, and cast the shadow of denser objects upon a photographic plate within its dark slide or cardboard box, and when developed the plate reveals the shadowed form.

The Science of the matter.—Should the surmise of Röntgen prove correct we may divide all rays into two groups. With the first of these we have long been acquainted, for a part of them excite our retina, producing the sensation of light. The rays of this group are capable of polarisation, reflection, and of refraction in proportion to the time of their vibration, and, in consequence of this latter property when passed through a prism, they are sorted out in orderly sequence according to their wave length with the rays of comparatively slow long vibration

PLATE XVIII.

at one end, and the rapid short waves at the other. A small part of this array is visible to our eye as the spectrum extending from the red to the violet. Beyond the red is a region of fourteen times greater extent, where the vibrations are too slow to be seen, and yet these rays have been shown by Tyndall to obey the laws of reflection, refraction, and polarisation, which govern the visible rays. Beyond the violet is another area at least ten times greater than the visible area, whose existence has been indicated by photography and most delicate thermometric and actinometric apparatus, and here, too, the laws of visible light are supreme. In all the rays of this first group the vibrations are undoubtedly transverse to the line of propagation, but in the X rays, which constitute the second group, it is surmised by Röntgen that the vibrations in luminiferous ether are longitudinal, this is to say, in the line of transmission, and hence the phenomena of regular reflection, refraction, and of polarisation are not obtained although the transmission resembles ordinary light in that it is rectilinear in transmission, and the rays can affect a photographic plate and produce fluorescence.

Of the history of the invisible rays of the spectrum, which exist before the red and beyond the violet, much might be said were it relevant to the matter, but, as we shall see, the newly-discovered rays have little in common with those of the spectrum.

We may then dismiss the work of Tyndall and Langley on the infra-red rays, and those of Stokes and others upon the chemical and thermic properties of the ultra-violet, when it is considered that the X rays, as they are called, differ from all these in that they are incapable of regular reflection, refraction, or polarisation.

The first to approach the subject was Herr Lenard, of Hungary, who examined the cathodal rays of a Crookes' tube in 1894, and took shadowgrams through screens of thin aluminium, wood and quartz. But it is only a few weeks since Röntgen published his researches on the vibrations of ether, which have something in common with light and yet are very different from it.

The vibration period of these waves has been obtained, and were they ordinary transverse vibrations they would possibly fall within the visible portion of the spectrum. Longitudinal vibrations in a string may be shown by the screech that may be produced by drawing the resinned hand down a string fastened to the bottom of a tin to serve as a resonator, whilst violin playing illustrates transverse vibrations in a string.

It is with the properties of the longitudinally vibrating rays that we are concerned. As has been already stated, they are not reflected so

as to be broken up or diffused when passed through powdered rock salt silver or zinc dust. Nor are they refracted when passed through prisms of water or carbon bisulphide. The visible cathodal rays are soon absorbed when passing through the air, but the X rays are much less so; nor are these latter deflected by the action of a magnet. Their most surprising property, however, is that they can pass through opaque bodies, and this they do inversely as the densities of those bodies. Thus, platinum is opaque, and aluminium comparatively translucent, though scarcely more so than glass, but whilst platinum is only eight times denser than aluminium, it is two hundred times more opaque to X rays. When these rays fall upon barium platinocyanide, or paper impregnated with it, they excite an intense fluorescence, and when objects of some density are held in front of the paper a shadow is thrown on it, and this proves the light to be rectilinear in its transmission.

It may be of interest to note that a practical difficulty is sometimes experienced from the tendency of the heat of the body to melt the gelatine on the plate during a long exposure. This can be entirely obviated by interposing a sheet of celluloid, which offers almost no obstacle to the passage of the rays, so much so, that if a plate be partly covered with celluloid and exposed, it is difficult to detect where the celluloid was placed

PART IV.—MISCELLANEOUS.

Sanitary Science, 1895.

BY JOSEPH PRIESTLEY, B.A., M.D., D.P.H.,
Medical Officer of Health, Lambeth, London.

PRACTICAL SANITATION.

Owing to the recent water famine in the East-end of London, necessitating an enquiry by the Local Government Board and, unfortunately, giving rise to legal action against the Water Company, taken by the London County Council, attention (professional and lay) has been directed afresh to the *constant* and *intermittent* water services, their advantages and disadvantages. Practically, it would appear that there is no such thing as a really *constant* service, so that we must arrange for, and be content with, the best *intermittent* service that we can devise—not tanks and cisterns that have been carefully arranged to gather all the dust, dirt, and débris possible, but a series of properly constructed and properly placed ones.

Dr. R. M. Talbot (M.O.H., Bow) has patented provisionally such cisterns (which are self-cleansing), consisting of glazed earthenware or other suitable material, and holding 26 gallons and upwards; they are ovoid or acorn-shaped, furnished below at their lowest points with draw-off taps, and above with ball-valves and overflows; the lids are watersealed. Several improvements have been suggested, *e.g.*, to do away with the ball valves and overflows; to make the covers so locked and sealed as to be practically air-tight; to allow the cisterns to terminate below in the service pipes; the capacity of each cistern to be increased to 100 or 200 gallons, etc. The principles involved are to make the cisterns of small capacity, and self-cleansing by having them in the form of inverted cones or cylinders, prolonged conically downwards to the service pipes, and highly glazed inside. In other words, the cisterns are practically expansions of the service pipes—large joints—and are to be used in connection with the *constant* service; whilst the W.C. waste preventers, the hot-water systems, and the kitchen boiler and feeders may be supplied from separate ordinary cisterns. A separate draw-off (for drinking purposes) may also be provided from the rising main.

An enquiry has also been held during the year as to the value of a

3-gallon, as against a 2-gallon, flush for W.C.'s. This enquiry was instigated by the London County Council, who maintain that their bye-law in relation to the proper and effectual cleansing of W.C. basin, trap, etc., cannot be carried out unless a larger flush is allowed than at present, *i.e.*, than the *so-called* 2-gallon flush, which is practically only 1½ to 1¾. The Water Companies brought all the expert evidence they could, so did also the County Council, with the result that they agreed to differ—it being admitted that the smaller the flush, the more perfect or modern must be the W.C. and its fittings, and *vice versâ*. Recognizing this fact, Messrs. Finch & Co., London, have recently brought out a new form of closet called the "Syphonic" (Bartholomew's patent). It is a simple wash-down with a lead trap, and so arranged that a syphonic action is started at once, by means of which the contents of the basin are rapidly sucked out, even before the flush of water begins to act upon the sides of the basin. A puff pipe (if necessary) can be fitted between the two traps. The diagram (*Fig.* 54) shews the simplicity of the patent and how it acts by means of two pipes from the flushing box; whilst it will be noticed that the water stands in the basin to a depth of 8½ inches (in this respect being equal to a valve closet). These closets are used in some of the most important buildings in London and elsewhere.

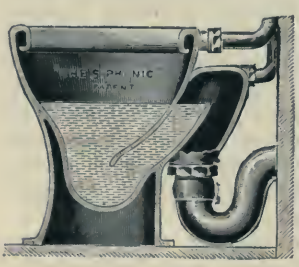

Fig. 54.

Messrs. J. Tylor & Sons, of London, have also recently brought out an improved form of W.C. called the "Orient," which is stated to

Fig. 55.

Fig. 56.

possess all the advantages of wash-down and wash-out closets without certain disadvantages which exist in both these types. Thus (*Figs.* 55 and 56), there is a large surface of water for the reception of soil; the

trap is sealed to a depth of 2½ inches; the outgo is so placed as to be readily examined; whilst every part of the basin is thoroughly cleansed at each flush. In use with this closet, Messrs. "Tylor & Sons recommend their patent "Column" valveless waste-preventer (*Fig.* 57), which is a cistern with a noiseless syphon action, giving a rapid, powerful, and certain flush.

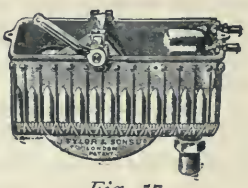

Fig. 57.

Mr. George Jennings, London, has brought out his improved "Closet of the Century," with a syphonic discharge fitted with a patent waste-preventing supply valve, which can be connected with the service pipe from any ordinary storage cistern for W.C.'s, thus making it an absolutely quiet closet when in use. The service pipe (*Fig.* 58) has two connections to the closet, one leading into the basin in the usual manner, the other into the top of the long leg of the syphon pipe *D*. The flush from cistern is thus divided into two streams, one flushing the basin, and the other rushing down the leg *D* thereby expelling the air through the puff-pipe *E*, starting the syphonic action, and emptying the basin, which is recharged by the regulating waste-preventing service-valve before mentioned.

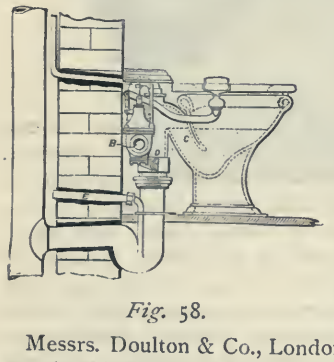

Fig. 58.

Messrs. Doulton & Co., London, have modified their "Simplicitas" W.C. (*see* "Medical Annual," 1892) by converting it into a form of valve closet. The basin and trap are made entirely of pottery, with practically a syphon trap into which (at the inlet) is fitted a valve, which is consequently covered with water on both sides, and so arranged that, should it leak from any unforeseen cause, there is still a fair depth of water left in the basin, *i.e.*, the seal of the ordinary syphon trap; there is a large water area in the basin; and the valve is entirely turned back out of the flushing passage when the closet is in use. There can, of course, be no accumulation of foul gases underneath the valve (which is, as we have seen, covered with water) owing to its working in the water of the trap; whilst the trap outlet is furnished with Doulton's patent metallo-keramic joint (*See* "Medical Annual," 1895).

Messrs. Gabriel, of Birmingham, have introduced a patent "water

spreader and wash-out pan." The water spreader (*Fig.* 59) is made of metal, and dispenses with the usual china arm (and putty or rubber joint) and the flushing rim, while the service pipe can be fixed in any position and its joints need not be disturbed when the spreader is removed. Every part of the pan (*Fig.* 60) is thoroughly cleansed with each flush, and the pan itself is up to modern requirements; whilst Messrs. Gabriel recommend their patent silent syphon cistern, though any form of flushing tank will do.

Fig. 59.

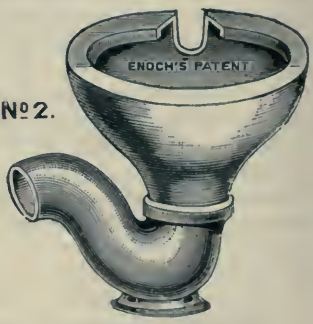

Fig. 60.

Mr. John Jones, of Chelsea, London, has brought out several important sanitary improvements, some of which are very ingenious, and will be found of the greatest use for Medical Officers of Health and Sanitary Inspectors. Thus. an expanding screw-stopper (*Fig.* 61), used in testing drains with water, consists of two plates, or discs, of galvanized iron, between which a special hollow rubber ring is fixed by means of grooves. The stopper is screwed up by means of a key which causes the rubber to expand outwards to the extent of an inch; and it is made with or without a centre outlet and in different sizes (3 inches to 18 inches) to suit all pipes. An indicator is also made, to be attached, if necessary, to the centre outlet, enabling the fall of a drain to be accurately gauged and the slightest leakage detected; or, should it be desired to test with smoke, Mr. Jones's improved patent rotary action hand smoke generating machine may be fitted on to this centre outlet by means of a union and nozzle. This smoke machine claims to be simple in construction, but equal in smoke-generating power to many machines three times as large, owing to the size of its rotary fans.

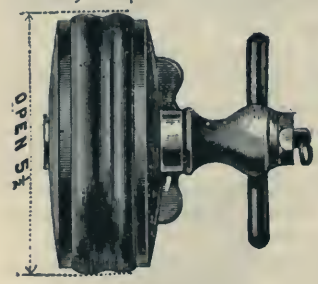

Fig. 61.

Mr. Jones has improved his double seal automatic air-tight manhole cover (*see* "Medical Annual," 1893) by adding to the (flat or dished) inner plate so as to securely fix it, one or two cross bars fitting into recesses, and furnished with central screws, thereby preventing this inner cover or plate from being raised by pressure of gas within the drain, and so maintaining a hermetically tight joint between this cover and its frame, which is made preferably of cast-iron. The outer cover or plate rests above the inner one, and is flush with the ground.

To be abreast with other sanitary Firms, Mr. John Jones has also patented a valveless syphon flushing cistern or water-waste preventer (*Fig.* 62), called the "Melbourne," and an improved W.C., which it is

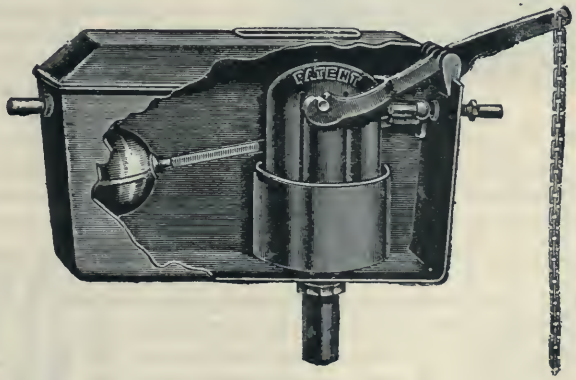

Fig. 62.

proposed to call the "Getatable." The "Melbourne" flushing tank is a valveless syphon; its flush is very rapid and of great force, being immediately started by a short and easy pull of the lever, which cannot be fastened down so as to get a continual supply of water through the down-pipe into the W.C. It is suitable for fixing either right or left hand, without changing the pull lever.

The "Getatable" closet is (as its name implies) provided with an opening in the case, enabling the outlet of the trap to be easily "got at" for the purpose of making a secure joint between it and the soil pipe (a *desideratum*, by the way). A suitable cover is supplied for this opening and can be securely fixed in position. The closet is a cheap one and very simple.

Finally, Mr. Jones has patented a new cistern safety valve (*Fig.* 63), to take the place *inside* the cistern of the copper flaps which at present are placed *outside* the waste pipes or overflows. The valve is made of

mica, and being, therefore, non-freezing, will act as a preventive against the freezing of the water in the cisterns inside houses (as at present obtains, owing to the cold air blowing through the overflow pipes). The valve will, of course, also guard against the entrance of dirt or dust into the cistern, and it will be readily seen from the figure that when the water is below the pipe, the mica flap closes to the action of the outer air.

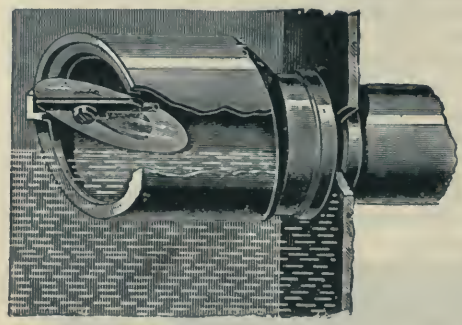

Fig. 63.

When for any reason a manhole or inspection chamber in the course of a drain is undesirable, an improved form of intercepting trap, recently patented by Mr. T. Kemp, of Brixton, London, may, with advantage, be used. From *Fig.* 64, it will be seen that two plunging arms are, as usual, brought up near to the ground level, but the one commanding the direction of the sewer is so shaped at its lower end as to readily admit the passage of drain rods for the purpose of unstopping any obstruction on the sewer side of the trap. A galvanized iron dredger, with line and ball attached, can be readily passed from the ground surface through the trap so as to remove any sediment from the bottom, which can then be wiped out perfectly clean by means of a mop. The interceptor is cast off the perpendicular so that the trap on its drain side can also be easily got at.

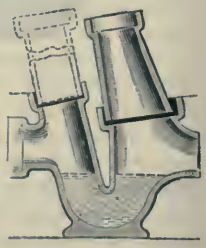

Fig 64.

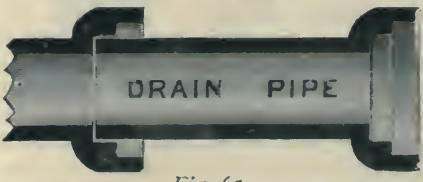

Fig. 65.

Mr. Kemp has also patented an improved socket drain pipe (*Fig.* 65) for ensuring true alignment of invert, reliable joints, and a saving of time and material — all important advantages. The socket is formed with two rebates, the inside one supporting in position the spigot end of the pipe, and the outside one

being so constructed as to admit of an equal quantity of cement being easily pressed round the joint. No cement can pass into the drain on account of the shoulder in the socket (more especially if clay is used for making the first joints); whilst the sockets themselves will receive spigot ends of cut lengths of pipes. Mr. T. F. Strutt has brought out the same idea in pipe sewers and house drains, which are to be obtained of Messrs. Mitchell, of Drury Lane, London, who have recently also brought out the "Mitchell's Valve" for fitting on to the clearing or inspection arm of an interceptor. It consists of a cast-iron ring or socket cemented into the mouth of the clearing arm, and (attached by means of a knuckle hinge) a heavy flap valve in the form of a flanged taper plug—the plug being fitted with a projecting sheath or ring of flexible material (generally rubber), so that when it is dropped into place a sound joint is instantly made. Should the inspection chamber become flooded, the valve can be opened by means of a chain fastened to the valve and the top of the chamber, or, in the absence of a chain, a crooked stick will do almost as well.

The importance of trapping drains is generally acknowledged, and it is even customary now to undertrap bath and sink wastes. These undertraps, however, are apt to unsyphon themselves in use, and to remedy this, the "Heros" trap has lately been brought out (*Fig.* 66). It consists of a balloon-shaped dilatation on the ascending arm, and by this means the complete evacuation of the trap is prevented—part only of the water of the trap being sucked up into this dilatation whenever rarefaction of the air in the discharge pipe takes place.

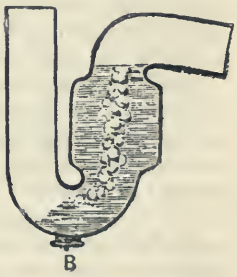

Fig. 66.

An improved pipe joint under the name of McGraw's patent (*Fig.* 67) consists of three or more small blockings or studs placed equidistantly around the inside of the socket on which the spigot of the next length of pipe is supported, and when placed home by being turned around, may be brought to bind on these

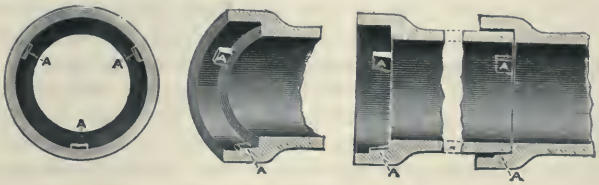

Fig. 67.

blockings by means of irregularities of surface (specially moulded or natural). True alignment and invert are thus secured, and all possibility of motion in the joint and tendency to force out the setting cement is removed ; whilst the joint, if accidentally knocked when setting, will not be destroyed, but an equal thickness of cement secured all round it.

The Albion Clay Co., of 18, New Bridge St., London, are the makers of Sykes' patent disconnecting slipper (*Fig.* 68) to enable sink and

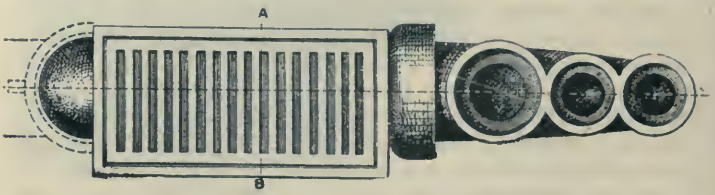

Fig. 68.

other waste pipes to be discharged 18 inches from the gully so as to prevent noxious gases escaping through these pipes into the dwelling. The slipper prevents also all splashing, and serves as a disconnector and a gully. It is furnished at one end with a socket, which admits of any number of in-takes being fixed, and at the other end with a spigot, to be used in connection with an ordinary S or P trap.

Capt. M. Nadiein has patented a syphon for automatically discharging fluids from vessels, *e.g.*, for urinals, closets, etc. It consists of several single syphons of increasing bores—all joined into one set, and so arranged that when the smallest pipe works, the whole system is brought into action.

The Sanitas Company have introduced a drain tester, which, when wetted or placed in contact with water, gives off a strongly smelling vapour of a very distinct character. It consists of an oyster shaped metal container, which is sealed with paper and packed with the necessary chemicals (assafœtida, etc.), and secured at one end by a string. When the tester is lowered into the W.C., or gulley trap, and washed down with a pail of water (care being taken to secure the free end of the string which is coiled round the two halves of the container to assist in keeping its contents intact), a strong smelling smoke will be caused which will readily escape from any defects that may exist in the drains, and thus lead to their detection. The string is to be unravelled until the paper seal is reached (*i.e.*, about one yard), and the seal is then to be torn off without, however, unwinding any more string.

A somewhat similar drain tester has been introduced by Mr. H. E. Burnett, of Peckham, London, though the principle of both these testers is somewhat similar to that mentioned in the "Medical Annual," 1892 (p. 551).

Mr. Milton Syer, of Peckham, London, has improved his drain plug (which he calls the "Grip"), by making the outer surface of the rubber ring *square*, thereby considerably increasing its gripping power, when the two galvanized iron rings are drawn together so as to force out the rubber ring against the sides of the pipe. Mr. Syer makes his plug with a central screw cap for water or smoke testing.

Messrs. Girard & Bordas, of Paris, have introduced a most efficient sterilizing process for water purification, consisting of the addition of permanganate of calcium to the water, which is then filtered through oxide of manganese. In the presence of organic matter and micro-organisms, the permanganate of calcium is split up into free oxygen, manganese dioxide, and oxide of calcium. Dr. Bassenge, of Berlin, suggests chloride of lime (chlorkalk) for the same purpose in the proportion of ·15 gram. of lime to 1 litre of water—the excess of chlorine, that may be left, being removed by bisulphite of calcium.

Mr. Haskin, of Westminster, has introduced a wood preserving process, for seasoning and preserving wood. By this process the wood sap is not extracted but retained, with its life-preserving properties, and solidified—the wood being taken in its green state and great heat and air pressure applied, causing distillation of the various compounds (antiseptic and preservative) in the sap. The soluble sap becomes insoluble, and the wood is rendered impervious to atmosphere, does not shrink, and is indestructible. The wood (when preserved) does not smell, and the cost of the process is slight.

The subject of disinfection comes up for discussion year by year, and during 1895 a great deal has been written and said as to the inutility of sulphurous acid gas as a disinfectant, while Chamberland in France, and Délépine in England, have shown the great value of chloride of lime solution (10 per cent). It is difficult, however, to wash a room and its contents without injuring them, nor is such a process as efficacious as spraying by means of the Geneste-Herscher sprayer (*Fig.* 69), which projects liquid disinfectants in a very fine spray—so fine as to allow each drop to rest where it strikes. This is effected by the spray nozzle being mounted on a long metal tube and being applied within a few inches of the surface, the adjacent atmosphere being also saturated. These sprayers are to be obtained from Messrs. Defries & Co., of Houndsditch, London, the makers of the "Equifex" disin-

fection appliances, and are exclusively used by the Municipality of Paris and elsewhere, their officers finding that this method of disinfecting costs less (in time and money), and is more efficacious, than the old-fashioned SO_2 method, whilst there is no necessity to disturb the inmates of the rooms or houses during the process.

Fig. 69.

The Sanitas Company, of Bethnal Green, London, have brought out two new soluble coal tar and essential oil disinfectants—one called "Creocide" (non-poisonous), and the other "Carbolated Creocide" (20 per cent. of tar acids); also some L.G.B. corrosive sublimate antiseptic and disinfecting pellets—each one dissolved in a pint of water yielding a blue-coloured solution of 1 in 1,000 strength; and the "Sanitas" pocket disinfectant, consisting of a small round thin glass globe (the size of a marble) containing sanitas oil, and surrounded with first cotton wool, and then a layer of lint—the whole being tied round daintily with gilt wire, and yellow string. To use one of these pocket disinfectants, it is only necessary to break it in a handkerchief, by pressing between the fingers or tapping against the table, with the result that the oil (about 1 teaspoonful in quantity) will escape into the cotton wool and lint, and its vapour may then be inhaled.

Formaldehyde—formalin used for the preservation of milk, etc.—is now suggested as a gaseous disinfectant. It is formed by the incomplete combustion of methylic alcohol by means of a small spirit lamp, the wick of which is surrounded by a small cage of fine platinum wire, which gets red hot.

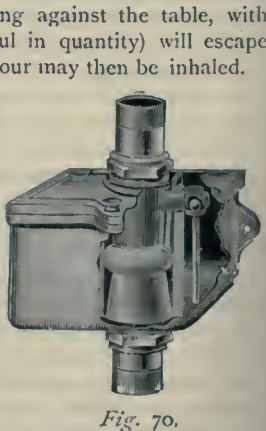

Fig. 70.

Several ideas for disinfecting the contents of house drains have also been suggested during the year. Thus, Messrs. Gabriel & Co., of Birmingham, have brought out a new patent automatic disinfecting box for use in connection with W.C.s in private houses, hospitals, etc., (*Fig.* 70). It is applicable to

any existing W.C. flushing apparatus, and consists of a small iron flush box with a brass tube through the centre—fixed on the down pipe, between the cistern and pan. A syphon arrangement attached to the outside of the tube allows a small amount of disinfectant to escape each time that the W.C. is flushed—the amount being regulated by means of a small metal ball. It is simple in arrangement, and the lid is made detachable and can be removed for the purpose of refilling the box, which, when full, lasts as a rule for two or three weeks (*i.e.*, allowing eight or nine flushes a day). The disinfecting box acts independently of the cistern, which can, therefore, be used with or without it; and the box may be made square or angular in shape according as it is required to fit into a corner or not. It is perfectly simple and cannot get out of order.

Tatters Imperial Disinfectant Co., of Runcorn, Cheshire, have patented and introduced an automatic appliance for the distribution of disinfectants. It consists of a porcelain jar with cover, and is to be placed in the feed-water or flushing cistern of a W.C. or urinal. Its action is very simple and effective, depending solely and entirely upon the varying levels caused by the rise and fall of the water in the cistern. As the level of the water changes, so a measured quantity of a saturated solution of disinfectant escapes along with the flushing water (see *Fig.* 71). There are no moveable mechanical parts to get out of order, and it is easily recharged by a solid block or other form of disinfectant. Messrs. Doulton and Co., of London, are the sole manufacturers of this patent.

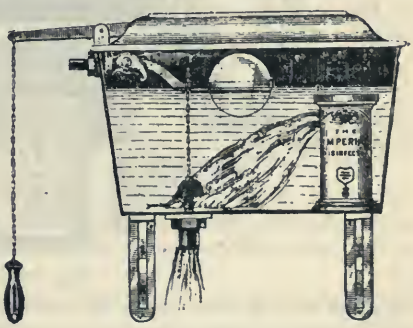

Fig. 71

The "Sentinel" drain air inlet ventilator consists of an ordinary 4-inch or 6-inch pipe with an annular depression around the funnel, and into this depression a ring of specially prepared disinfectant is placed, one ring lasting three to six months. In this way (it is stated) the entering air or the back rush are disinfected, and so rendered innocuous, whilst the presence of a strong smelling disinfectant in the drains may be the cause of obvious defects therein becoming known at any time, should they occur.

Dr. Thresh, of Chelmsford, Essex, has patented a new disinfecting

apparatus (*Fig.* 72), depending for its action upon "current" steam a few degrees over 212°F., to be followed by hot air for drying purposes. It is stated to be a cheap machine, and is as simple but efficient as it is cheap. It consists of a central chamber to receive the infected articles, and this chamber is surrounded by a jacket containing a saline solution, boiling at a temperature of 225°F., and giving off steam which is superheated to a temperature of about 220°F.

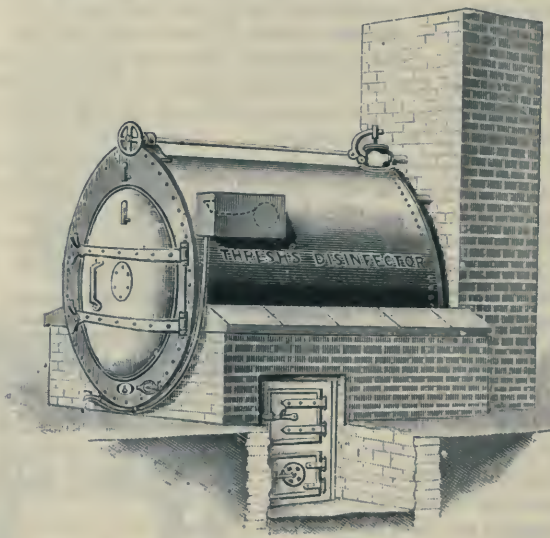

Fig. 72.

A small furnace below heats the machine, and the steam passes into the chamber and finally escapes into the chimney—the steam, of course, being practically not under any pressure, save that of the atmosphere. A current of hot air is finally drawn through the chamber, displaces the steam, and dries the articles—an arrangement on the principle of other disinfecting machines of the present day. The saline solution is used because it boils at a temperature over 212°F.—a practical suggestion first made by Koch in 1881, and subsequently worked out by Dobroslavin and Emme. The temperature of the water (not solution) vapour given off at first was found by these observers to be 212°F., and this temperature is subsequently superheated by the higher temperature of the boiling saline solution in the jacket. The sole makers of the machine are Messrs. Newton, Chambers & Co., of Sheffield and London.

"Saturated" steam is coming to the front as a disinfectant, and slowly, but surely, superseding "superheated" steam.

The new disinfectant—Antinonnin—is a potash salt of orthodinitro-cresol, and is one of the yellow cresol colours prepared by the Farben-Fabrik, at Elberfeld. It is a powerful bactericide and anti-parasitic—inodorous and non-volatile, though poisonous. It is readily soluble in water, but unfortunately leaves a yellow stain.

GENERAL REMARKS.

Since Koch published his classical work on Tuberculosis, in 1882, experience has shown that the conclusions then drawn were well-founded, so that tuberculosis is now considered by all to be an infectious, and therefore communicable, disease, due to the presence of a germ (the tubercle bacillus). The question has come prominently forward during the year as to the means to be adopted to prevent the increase, or spreading, of such a disease, and to the New York City Board of Health, under the expert guidance of Drs. Biggs and Huddlestone, belongs the praise of having first brought this important subject practically forward in the form of rules for the sanitary supervision of persons affected with tuberculosis. These rules may be summed up as follows :—

(1,) Notification ; followed by (at present)

(2,) Inspection *only* in certain cases, *e.g.*, tenement houses, hotels, boarding houses, or by special request of the attendant medical practitioner ;

(3,) Compulsory disinfection of tuberculosis-infected houses or clothes, after death or removal of patient (soda solution of the strength of ½-pound to 3 gallons being recommended as the renovating and disinfecting agent) ;

(4,) Bacteriological examination and diagnosis of cases, more especially in their early stages ;

(5,) Education of the people in the infectious nature of tuberculosis by means of handbills and circulars ;

(6,) Isolation in hospitals and sanitaria.

Again, the Report of the Royal Commission on Tuberculosis, which was presented to Parliament on April 22nd, 1895, has collected together in book form the evidence (experimental and otherwise) upon which is based most of our knowledge of this disease, *e.g.*, as to its being identical in man and animals, and transmissible from man to animals, and *vice versâ*. Drs. Sidney Martin and Sims Woodhead were the bacteriological experts employed to make the experiments, which have comprised on the one hand those of Gerlach, Johne,

Peuch, Straus, Wurtz, Nocard, Chauveau, Arloing, Galtier and Veyssière in regard to the *direct* nocuity of tuberculous meat, and on the other hand, those of Bang, Axe, Schwerte, and others, in regard to tuberculous milk. Further, the Commission reports that the tubercle bacilli form an integral part of the disease ; are the means by which the disease is spread, *e.g.*, from milk or meat from tuberculous animals ; and are affected permanently or temporarily by being subjected to the process of cooking ; whilst at the end of the Report the question as to diagnosing tuberculosis in cattle by means of injecting tuberculin is merely touched upon, the Commission not giving an opinion for or against its efficacy. Directly arising out of the Report, the subject of public abattoirs has again come up, and the advantages to be derived from a proper and systematic inspection of meat supplies insisted upon. It is clear that every animal intended for the food of man ought to be compulsorily examined by experts before and after slaughter, and to accomplish this public abattoirs are indispensable.

Before leaving the subject of tuberculosis, mention may be made of the experiments of Profs. Délépine and Ransome on the disinfection of tubercle-infected houses—their results being as follows :—

(1,) Tubercle-infected rooms cannot be disinfected satisfactorily by fumigation methods, *e.g.*, SO_2, chlorine, and euchlorine ; but can by means of the *direct* application of a 10 per cent. solution of chlorinated lime to the walls ; whilst

(2,) Light is the most important natural disinfecting agent, in the case of the tubercle bacillus (and other organisms).

Oysters have come in for a fair share of attention during the year, but it is an attention that has certainly not, as yet, benefited the trade. Sir Wm. Broadbent began by suggesting in a medical paper at the commencement of 1895 that oysters *might* be the cause of typhoid fever, and such evidence as he brought in support of his views has been augmented since by other observers, such as Sir Charles Cameron, Sir Peter Eade, and Dr. W. A. Conn, of Middletown, Connecticut. The last-named observer traced a limited epidemic of typhoid, affecting the male members of certain clubs, to the consumption of oysters "that had been fattened within one hundred yards of the outlet of a private drain from a house wherein were living a lady and her daughter, both of whom had but recently been ill with typhoid!" Such splendid (!) positions* for oyster beds appear

*The evidence of cholera importation into inland towns in England through oysters which had been fattened near the sewer outfall of a cholera-infected port, is certainly striking (*vide* Local Government Board Annual Report, 1893-4).

to be not at all uncommon, and, as professors Herdmann and Boyce have recently pointed out the prolonged periods for which oysters can live in strong solutions of sewage, the seriousness of the subject has fortunately been the means of a special Inquiry by the Local Government Board into the circumstances under which the cultivation and storage of oysters and other shell-fish are carried out around our coasts, and a special Report on the possible conveyance of certain water-borne diseases, especially typhoid fever, by oysters and other molluscs, by the "British Medical Journal."

That a real danger exists in some cases, no one will gainsay; and as a natural corollary it follows that some sort of rigid supervision and examination, Governmental or otherwise, of all oyster beds—at home or abroad—is called for; and in the term "oyster" are included all bivalves and molluscs such as mussels, cockles, etc. Indeed, at the end of the year came another small localized outbreak of typhoid fever amongst the dancers at a ball in Stirling who had partaken of oysters; and though whether the typhoid and oysters were causally related or not is not yet proved definitely, the fact of this outbreak will be sufficient to emphasise the importance of a full investigation into the whole subject of the conditions under which oysters are cultivated.

Diphtheria continues to be studied, and the importance of school influence therewith noted. Throughout England and Wales there has been an augmented incidence of the disease between the ages of three and ten in 1871-80, and 1881-90 as compared with 1861-70, and this augmented incidence has been most marked in London. The Education Act was passed in 1870, and considering the age-incidences of the increase of diphtheria, it is probable that compulsory school attendance has played an important part. Dr. Adams has shown, too, that the diphtheria rate increases as the subsoil water rises.

The value of early and accurate diagnosis of diphtheria cases by means of bacteriological examinations has been much insisted upon lately, and has been practically shewn by the Local Government Board having arranged for the examination of suspected diphtheritic membranes or secretions sent on to them by Medical Officers of Health; and by the Metropolitan Asylums Board having arranged with the Director of the bacteriological laboratories of the Royal Colleges of Physicians and Surgeons to "examine bacteriologically all cases of diphtheria admitted to their hospitals for a period of six months," as a *temporary* and tentative arrangement. The Worcester County Council, the Sanitary Authorities at St. Helen's, Marylebone, Bristol, Glasgow, etc., have made similar arrangements with bacteriological experts for the same purpose.

The antitoxin treatment is also being officially tried by the Metropolitan Asylums Board, whose report thereon is anxiously awaited.

M. Haffkiné returned to England at the end of the year 1895, and gave, in the form of a lecture, the results of his vaccination against cholera in India. These results are practically :—

(1,) Inoculated persons suffer less in number and severity than the uninoculated, in places where cholera is epidemic and widespread ;

(2,) The treatment, applied after an epidemic actually breaks out, tends to reduce the mortality even during the time which is claimed for producing the full effect of the operation, a reduction varying from $\frac{1}{2}$ to $\frac{1}{7}$, according to the strength of the vaccine used—the stronger, the more successful ;

(3,) Taking the Lucknow and Calcutta results, it appears that the reduction in cases and deaths, lasting from fourteen to fifteen months after cholera vaccination, were noticeable in the former case, with small doses of weak vaccines, and in the latter case, more definitely (seventeen to nineteen times smaller) with middle strength doses.

The number of cases inoculated is comparatively small, but still M. Haffkiné is sanguine as to his ultimate success, and in this view he is supported by Prof. Koch.

Two other forms of serum-therapy have engaged scientific attention during the past year, viz. : (1,) Antivenene, or the anti-snake poison—introduced by Prof. Calmette, of France, and Prof. Fraser, of Edinburgh ; and (2,) The antistreptococcic serum. This latter is suggested as a remedy in erysipelas, and all other processes due to the infection of streptococci ; and as the different forms of streptococci are accidental rather than specific, the source of the microbe is therefore immaterial in preparing this form of serum. Further, the treatment of malignant tumours (non-operable) by the toxins of the streptococcus erysipelatis and the bacillus prodigiosus has been again tried during the year but with varying success.

It will thus be seen that germs are being specially studied, and it is coming to be more and more understood that there are two classes —nocuous and innocuous. It would appear, indeed, that some germs are necessary to the ordinary processes of existence, for Dr. J. Kijanizin, of Kieff, by means of some experiments with animals in sterilised air, shews that, when such animals have their air and food deprived of all micro-organisms :—

(1,) There is a remarkable decrease in the assimilation of nitrogenous matter ;

(2,) Weight is lost more quickly, and the excretion of nitrogen and carbonic acid gas increased ; and

(3,) Animals actually die.

From such experiments it would seem that micro-organisms aid in decomposition and the peptonizing of the nitrogenous matter in the intestines, and so are, *indirectly*, a necessity of life.

Some further experiments of Mr. J. Parry Laws and Dr. F. W. Andrewes shew that the bacilli found in sewage are different from those in sewer air—the former liquefying nutrient gelatine, the latter not; while the number of micro-organisms decreases in atmospheric, as well as in sewer, air in the cold weather. The ordinary bacteria coli communia (found in such quantities in the normal intestines) grow and multiply abundantly in sewage sterilized by heat, when incubated at 37°C.; whereas the typhoid bacilli, under similar conditions, quickly perish. These investigators suggest that a sewage-polluted soil may give up germs to the subsoil air and so be a source of danger to health.

Dr. A. E. Wright and Surgeon-Major D. Semple report that they have found typhoid germs in the urine, and not in the fæces, of patients suffering from typhoid, so that this disease may be considered as a septicæmia, the mesenteric glands and the spleen being the chief seats of the germs. The practical bearing of this scientific fact cannot be over-estimated.

In connection with the vexed question as to the dangers of smallpox hospitals being built near to other hospitals or communities, Dr. T. Thorne has spoken out plainly during the year, stating that "to lessen the risk of infection, no smallpox hospital ought to be erected :—

(1,) Within a quarter of a mile of any hospital (infectious or not), workhouse, or any similar establishment, or a population of one hundred and fifty to two hundred persons;

(2,) Within half a mile of a population of five hundred to six hundred persons, whether in one or more institutions, or in dwelling houses.

Collections of inhabitants just beyond the half-mile radius should call for special consideration."

Such, then, must be looked upon as the present view of an important Government Department—a view which, if conscientiously and literally acted up to, will put great difficulties in the way of Sanitary or Hospital Authorities finding sites for smallpox hospitals, and in grappling with the important subject of prompt isolation of smallpox cases. The Local Government Board, however, has acted up to its view by refusing sanction to loans for the purposes of building smallpox wards on the same sites as wards for other infectious diseases; though Mr. Justice Kekewich, in the case for injunction against the Guildford, Godalming, and Woking Joint Hospital Board, to restrain

them from erecting a smallpox hospital near to dwelling houses, laid down the law that there was no proof of a distinct danger through atmospheric spread of the disease (danger from maladministration being allowed), and might have added that the experiences of London, Leicester, Oldham, Halifax, Birmingham, etc., were to be considered as nothing!

Several cases of food-poisoning have cropped up during the year, *e.g.*, at Sutton Coldfield, Homerton and Leicester, and in an Irish convent. They all seemed to be due to the formation of ptomaines and other substances generated from animal matters, *e.g.*, soup, meat pie, tinned meat, and custards.

The subject of "return" scarlet fever cases has again attracted much attention during 1895, and has been specially reported upon by the Metropolitan Asylums Board. Sanitary Authorities endeavour to put the blame on to the Hospital Boards, and *vice versâ*. In fact, in London, the report of the sub-committee adopted October 23rd, 1895, by the General Purposes Committee of the Metropolitan Asylums Board was to the effect that there is no evidence to show that any appreciable number of patients admitted to hospital during the past two years have contracted infection from patients previously discharged therefrom; that there is reason to believe that, of the so-called "return" cases, some have been due to the re-introduction of infection into households owing to the disturbance of insufficiently disinfected clothes, etc., left at home and stored away during the patient's stay in hospital; and that, as a corollary, Sanitary Authorities should be called upon to put their houses in order, *i.e.*, adopt proper and rigid methods of disinfection—at least those, if any, that have not already done so! Sanitary Authorities have yet to reply to this charge, and an easy task such replying will be, for the Report of the Board is not free from several errors.

The Epidemiological Society also discussed this subject of "return" cases at one of their meetings during the year.

A threatened epidemic of Influenza, at the beginning of 1895, brought forth another Memorandum from the Local Government Board, stating that Influenza is a disease against which it is most difficult to apply measures of prevention with any substantial prospect of success, owing to its highly infectious nature and the extreme shortness of its incubation period. The Board recommend the following precautions:—

(1,) Separation of the sick from the healthy;

(2,) Sputa of the sick, especially in the acute stages of the disease, to be received into vessels containing disinfectants, and infected articles and rooms to be cleansed and disinfected;

(3,) When Influenza threatens, unnecessary assemblages of persons to be avoided, and rooms or buildings occupied by such assemblages to be efficiently aërated and cleansed during the intervals of occupation ;

(4,) When Influenza is abroad, persons to avoid, if possible, all depressing conditions, exposure to cold, fatigue, etc., which predispose to the disease ; and if attacked, to at once seek rest, warmth, and medical treatment, remembering that the chief danger of this disease is the risk of relapse with dangerous complications.

The Opium Commission have published a practically unanimous* Report to the effect that opium is but little consumed compared with the exaggerated statements made, and that opium smoking is far less prevalent than opium eating ; that alcohol in India is more abused amongst the European residents than opium amongst the natives. The Commissioners, consequently, make no suggestions as to radical changes in customs and habits.

Herr Schneider, of Dresden, suggests very high temperatures as a new method of utilising the dust refuse of towns, for by this means the mineral and metallic ingredients fuse together into a fairly homogeneous and completely vitrified building material—hard, durable, and impervious—which is well adapted for foundations, paving, open channels for waste waters, etc.

All laundries, being now under the new Factory and Workshops Act, 1895, either factories or workshops, will be in future under strict supervision, and consequently much interest was manifested in the last Laundry Exhibition, which was the means of showing the special hygienic guarantees to the public, of those worked by steam—the superiority of the new style of machinery over the old method of hand scrubbing.

*Mr. H. J. Wilson (representing the anti-opiumists) is the only Commissioner who does not sign the Report.

THE EDITOR'S TABLE.

A Review of New Inventions, and Pharmaceutical and Dietetic Novelties.

It has always been a matter of regret that our space prevents us from reviewing the books of the year; we can only content ourselves with giving a complete list of new books with such particulars as may be useful to our readers in selecting them. But there are books which do not fall under this heading, because, although books, they are not "literature." To this class belong the diaries, case books, and reference books, which, perhaps, play a more important part in regulating and lightening the work of every-day practice than work of a literary kind.

To begin with, every practitioner needs in his daily round, pens, ink and paper. It is a poor business to wait while these are produced by the patient visited. We have always carried our own—Messrs. J. Wright & Co., of Bristol, prepare some blocks of paper, convenient for carrying in the pocket, perforated for tearing off as the prescription is written, and we write with the "Swan" Fountain Pen, which supplies a constant flow of ink to a gold pen. It is always ready for use, and never gets out of order. It is with this pen that the bulk of the literary work of the "Annual" is done, both in the editorial and publishing departments. The practitioner who does not possess one is at a constant disadvantage, because he loses more time in a week than would pay for a "Swan" Fountain Pen, which would serve him for years; they are practically indestructible, and it appears impossible to improve upon them.

Every practitioner has his own views on the question of medical visiting lists; our own prejudice is in favour of those which give the visits for the month, rather than the week. Messrs. Silverlock's diaries are familiar to the profession, and are designed to meet all tastes. The diary of Messrs. J. Wright & Co., of Bristol, is the result of a very careful consideration of the requirements of the practitioner, and has advantages over most diaries in the fact that it is designed to save the time of practitioners, and to render bookkeeping as little laborious as possible. Messrs. Burroughs, Wellcome & Co. have issued a diary which contains a great deal of information respecting their numerous productions, and is well suited for practitioners whose list of patients is not too numerous. Messrs. Oppenheimer may claim the palm for the most portable of visiting lists. This list is in monthly form, and is particularly neat and compact.

Another important work for the study table is the list of appointments and engagements, and here we can without hesitation

recommend the "Every Hour Diary," published by Messrs. Eason & Son, of Dublin. It gives a full week visible at once, with a place for noting any engagement at any particular hour. The hours and dates are before us; it is only necessary to fill in the name. This diary has a block blotting-pad on the cover, and is rendered readily available for reference by the system of indexing, which Messrs. Eason have patented. Smaller diaries available for the pocket are also issued by the same firm at nominal prices.

Messrs. Eason & Son also produce a number of indexed works, which are particularly useful to the practitioner, either for case books or for taking notes on any particular subject. There is nothing issued from the press which will bear any comparison with them, because they provide a system of indexing and a method of rapid reference, only possible where elaborate machinery has been contrived and patented to this end. The productions of this firm are moderate as regards cost, and our readers who require any particular form of book for recording notes would do well to state their requirements, and we feel sure they will get what they want.

A very useful work for the medical practitioner has recently been introduced by Messrs. Keene & Ashwell, of 74, New Bond Street, W. It is called the "Physician's Diary and Case Book." It consists of a first part, which is a daily diary (10 lines to a day), interleaved with blotting paper, and of a second part, which is an indexed case book. The idea is particularly practical. It combines two necessary books in one, and the whole arrangement is obviously the result of a practical acquaintance with the every-day requirements of the practitioner.

We may mention incidentally that Mr. Peter Möller has produced a large work dealing with the question of cod-liver oil and chemistry. The first part of the work is an elaborate monograph on cod-liver oil, and is very interestingly written. The second part of the book deals with organic chemistry, and is the most lucid work on this subject which has fallen into our hands. Even a short perusal will convey a very good general idea of this branch of chemistry, which is now of far greater importance to the study of medicine than formerly. We are glad to find that Mr. Peter Möller entirely coincides with us in our view about the absolute uselessness of the so-called active principles of cod oil.

SURGICAL APPLIANCES.

Air Pessary.—Messrs. Ferris & Co., of Bristol, send us a new form of air pessary, which appears well adapted to meet a class of cases that are not easily fitted with the ordinary pessaries, on account of the difficulty of securing their retention. This pessary, when introduced and inflated, forms a thick air-pad, perforated in the centre for the escape of discharge. The tube leading to the air cavity is prevented from causing irritation by a conical shaped indiarubber curtain, which reaches the entrance of the vagina. An air-pump for distending the pad is supplied with each pessary. The whole arrangement is free from the disadvantages of similar appliances, and will prove a very

useful addition to our resources in dealing with advanced cases of uterine prolapse, especially in elderly patients. The price of pessary with air-pump is 5s. 6d.

Aluminium Trusses.—Messrs. Salmon, Ody & Co., the well-known manufacturers of trusses, have sent for our inspection the various metal parts entering into the composition of trusses, both in ordinary metal and in aluminium ; the remarkable difference in weight between the former and the latter is very noticeable. We may accept it as a fact that in future the metal parts of trusses and surgical appliances to be worn by the patient must be made of aluminium in preference to any other metal. Not only is it half the weight of other metals, but its freedom from rust and tendency to tarnish renders it particularly appropriate. We are glad to know that this well-known firm has at once taken advantage of the qualities of the new metal in the manufacture of their appliances.

Artificial Limbs.—In connection with the use of aluminium for surgical appliances, Mr. Jas. Stubbs, of Station Road, Sheffield, also calls our attention to improvements introduced this year in the manufacture of his artificial limbs, the chief of which consists in the substitution of this metal for the older material of willow wood or leather—the aluminium being exceedingly light and at the same time incorrosive and strong. All the legs are now fitted with his patent rubber feet, and for amputation above the knee a rubber cushion, lined with buckskin round the top, has been added, which forms a very soft and comfortable support to the patient.

Aseptic Reel Holders.—This is a small metal box suitable for the surgical drawer or bag, containing three reels for carrying sutures. It is so made that the reel compartment need not be opened unless to refill, and the sutures are always kept excluded from the air. The box and reels are made entirely of metal, so that the whole appliance may be placed in boiling water from time to time to ensure aseptic conditions. It is a very well designed appliance, and inexpensive. Another very practical appliance introduced by the same firm for carrying catgut ligatures is a small glass bottle, about 1½ inches long, filled with carbolized oil, in which is immersed a reel containing the ligature. This can be withdrawn, as wanted, through a tiny aperture on one side of the bottle, the end being protected by an india-rubber cap. This appliance can literally be carried in the waistcoat pocket, and is one of the most ingenious arrangements we have seen for some time. The cost is only 1s. 3d. Messrs. Ferris & Co., of Bristol, are the manufacturers.

A Scientific Feeding Bottle.—Under the name of the "Allenburys Feeder," Messrs. Allen & Hanburys have introduced a feeding bottle (*Figs.* 73 and 74) for infants, which will at once command the approval of the medical profession. In the first place it is curved in the right shape, and graduated ; but its unique feature is, that it is open at both ends when being cleansed, so that a stream of water from a tap can be run through it, while there are no corners in which particles of milk can lurk and ferment. Another very remarkable feature of the bottle

is, that the end not occupied by the teat is furnished with an air valve, which naturally facilitates very much the efforts of the infant to extract the contents of the bottle. The rubber nipple is also differently constructed to those ordinarily in use, its advantage being that it can be turned inside out for purposes of cleansing. We shall recommend this feeder to our patients.

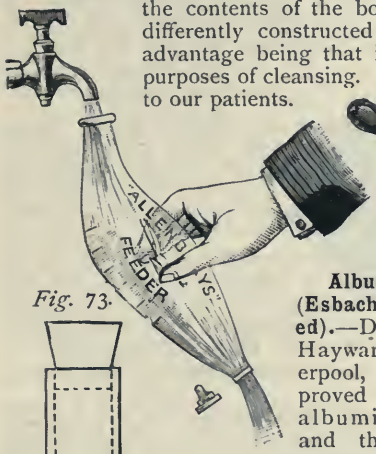

Fig. 73.

Fig. 74.

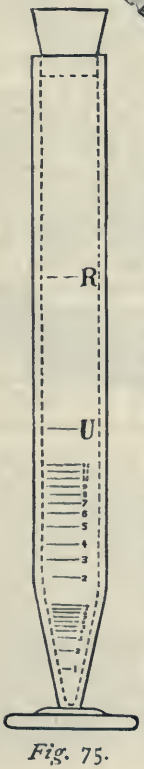

Fig. 75.

Albuminometer (Esbach's Improved).—Dr. Charles Hayward, of Liverpool, has improved Esbach's albuminometer, and the instrument, as now manufactured by Messrs. Sumner & Co. (*Fig.* 75), consists of a pedestal tube, very clearly graduated, and secured at the top by an indiarubber stopper. This very much simplifies the test, and renders the calculation of the actual amount of albumen in any specimen of urine as simple as the ordinary qualitative test. We must congratulate Dr. Hayward on the very practical character of the appliance, and Messrs. Sumner for the way in which they have made the fine graduations so clear and distinct that the result can be read at a glance.

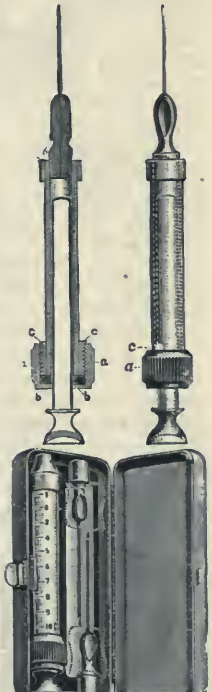

Fig. 76.

Anti-toxin Syringe.—Messrs. Sumner & Co., of Liverpool, have sent us the latest improvement which has been made in anti-toxin syringes (*Fig.* 76). Its chief feature is the replacement of the piston by a solid metal stem, which occupies the whole body of the syringe. This

arrangement provides not only for absolute asepticism, but renders the task of maintaining it so simple that neglect becomes almost impossible. It is also one of the strongest and most durable of syringes, there appearing to be nothing which is likely to get out of order, or give trouble. We can strongly recommend it, as it meets every indication in the best manner possible. It is packed in a neat metal case, which is provided with a removable leather cover.

Bandage "Non-run-away."—This is an invention by Dr. Duke, of Cheltenham, designed to prevent a bandage falling from the hand and unwinding. The bandage, as arranged by Dr. Duke, will always remain securely rolled, even if it drops from the hand during an application of a dressing. Messrs. Reynolds & Branson, of Leeds, are the manufacturers.

Basin Enema Clip.—This is an ingenious and very practical invention, produced by Messrs. Reynolds & Branson, of Leeds. It is a clip by which the enema syringe is gripped to the side of the basin containing the water, so that the tube is maintained below the surface of the water, and the introduction of air is rendered impossible. It costs only 6d., and will vastly increase the convenience of every enema syringe to which it is attached.

Bed and Douche Pan (combined).—The ordinary bed-pan is practically useless when vaginal douches have to be administered, there being an inevitable tendency for the water to run over the back of the pan into the bed. Messrs. Woodward & Rowley, of Swadlincote, have introduced a pan, designed by Dr. H. Fisher of the same town, to obviate this difficulty. The patient's buttocks rest upon a bridge, and any water escaping from the vagina re-enters the pan behind the bridge, and is retained in the receptacle instead of passing into the bed. The size of the vessel is such that it may be used for free douching, which is a considerable advantage over the ordinary pan, the size of which prevents any great quantity of fluid being used. Owing to its construction it is very easily cleansed, and the contents can be always examined, as there are no covered corners to intercept the view. It is very comfortable in use, and, being provided with handles, patients can adjust it for themselves. We consider it a very practical addition to the resources of the sick room.

Chart Holder (New Improved).—This meets a recognized want in hospitals, a chart holder that will hang over the bed, of a proper size to hold the charts used, and from which they can be readily removed when necessary. Wood and metal have both been used previously, but the result is always clumsy. The Improved Chart Holders, introduced by Messrs. J. Wright & Co., of Bristol, are made of leather board, and are furnished with nickel plated corners and eyelets (*Fig.* 77). They are made to any size required, and include the printing on them of the name of the hospital or ward in gold letters over the chart at an inclusive cost averaging

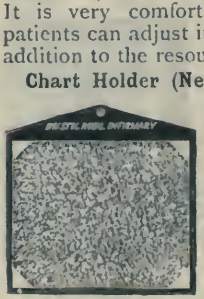

Fig. 77.

about 1s. each. They are the most elegant chart holders we have seen, and probably the least costly. They will, no doubt, be very largely adopted in our hospitals.

Drawer (Dust-proof and Self-closing).—This is a metal drawer, or series of drawers (*Fig.* 78), intended to be screwed on to a table, and has the peculiar property of self-closing. When the drawer is fully pulled out it remains open, but a slight upward touch to the handle is sufficient to close it. We have made many practical experiments with the drawer, and find that it works perfectly. We think we are right in saying that the motive force which saves us the labour of pushing the drawer home, is an ingenious application of atmospheric pressure. The invention has only been produced as we are going to press, but we believe it will prove of very great importance, for "who would fardels bear?" We mean, who would take the trouble to close a drawer when the good spirits of the atmosphere, controlled by Messrs. Reynolds & Branson, of Leeds, are ready to assist us?

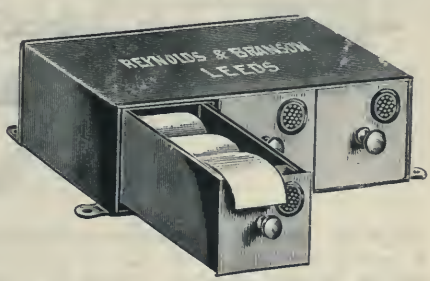

Fig. 78.

Elastic Stockings.—The latest improvement made by Mr. J. H. Haywood, of Nottingham, in the manufacture of elastic stockings, is in the arrangement of the seam (*Fig.* 79). This is usually made with binding, which renders it more bulky than the other parts of the stocking, and although thicker is more liable to break away owing to the stitching giving way. Mr. Haywood replaces this by a woven seam which is no thicker than the body of the stocking, rendering it more comfortable to wear as well as more durable.

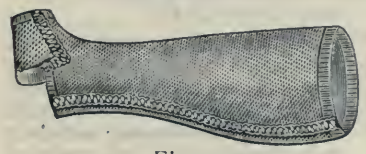
Fig. 79.

Enema Cupboard.—This is a hanging box for keeping the enema syringe without folding it (*Fig.* 80). It can be obtained for a shilling from Messrs. Reynolds & Branson, of Leeds.

Enema Rack.—This is a simple arrangement by which enema syringes can be hung up in an ordinary cupboard when not in use, and provides for the prevention of any mess from dripping. The rack is made so as to fold up for portability. It only costs 9d., and is of great practical utility.

Fig. 80.

Exploring Trocar (A Modification of the).

Arthur W. Prichard, M.R.C.S.

I beg to introduce to the profession a modification of the exploring trocar (*Fig.* 81), which I think will be found to be useful in the treatment of such collections of fluid as localized empyemata, abscess of the lung, and deep abscesses of the neck and pelvis. I have experienced in my own operations, and witnessed in those of others, sometimes, a difficulty in cutting into an abscess which has been proved to exist by the ordinary exploring needle, and it struck me that if we had a guide on the needle that could be left *in situ* after the needle was withdrawn, some operations would be greatly facilitated. I have therefore had made a fine director, to which a suitable handle is attached, fitted on to an exploring needle. The director very slightly increases the thickness of the needle. The instrument is used with the director encasing the needle. Pus having been found, the syringe and needle are withdrawn together, and the director, which can be held steady by the firm handle, serves as a guide for a knife, or, in dangerous regions, for a sinus forceps, to be run down the groove. The instrument has been excellently made for me by Messrs. Down Brothers, 5 and 7, St. Thomas's Street, London, S.E.

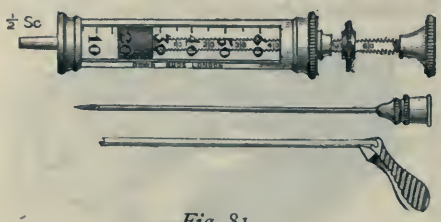

Fig. 81.

Forceps (Aseptic Dressing).—This is a very simple and practical arrangement by which dressing forceps can be always kept properly cleaned. The spring-end of the forceps is turned over, leaving a wide space between the blades, so that every part of the instrument is readily accessible. The forceps are made from one piece of metal, and there are no rivets. We illustrate an artery forceps (*Fig.* 82), made on

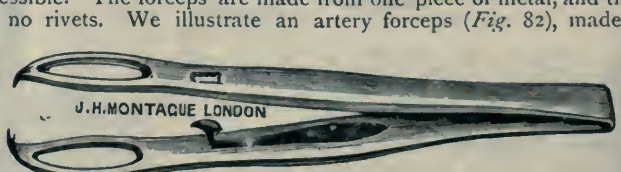

Fig. 82.

the same principle, by Mr. J. H. Montague, of New Bond Street, London, W.

Infant Clothing.—We would commend to our readers, and particularly to those who have infants of their own, an invention which amounts to a complete reform of the manner in which infants are dressed. It is less a question of the nature of the garments than the

manner in which they are applied which has occupied the attention of Mrs. Drury, a lady who has shown her sympathy with child-life, in the verses which she delights to write for them. The primary idea of the invention is that all the various garments required for the infant should be so arranged that they can be put on, as it were, in one piece, while the infant lies in the recumbent position, thus saving fatigue to the infant and time to the nurse. The arrangement by which this is effected is not only ingenious, but the clothing itself is designed on the artistic line which we should expect from Mrs. Drury. The invention has hardly yet taken a commercial form, but samples of the clothing are exhibited by Messrs. Evans & Owen, of Bath, from whom all particulars can be obtained. We are perfectly sure that every medical man will endorse our opinion as to the very great need which exists for reform in infant clothing, and when they have seen Mrs. Drury's designs they will realize the extraordinary attention to detail which marks Mrs. Drury's latest effort to bring comfort to our little ones.

Irrigating Trays (Improved). *R. H. Lucy, F.R.C.S., M.B.*

The accompanying woodcuts (*Figs.* 83 and 84) illustrate two varieties of an irrigating tray designed for use in dressing wounds, especially such as require prolonged irrigation with large quantities of fluid. They are flat trays of hammered copper, plated, and with a curved back to prevent fluid washing over on to the hand. The bent tube, which serves as a handle and delivery tube combined, is fixed as close to the tray bottom as possible. The front edge is made concave or convex in outline, and bent upwards somewhat, to ensure a surface as well as edge contact. A length of rubber tubing attached to the end of the hollow handle carries the fluid away into a suitable receptacle beneath the table or bed. The advantages claimed are avoidance of mess during wound dressing; saving of time; there is no need to change receptacles frequently, as in the case of ordinary pus basins, etc., the irrigation being carried on continuously. The delivery tube is large enough to allow passage of lymph flakes, blood clots, etc., as well as fluid. The tray can be firmly, easily and accurately held in contact with the parts irrigated. The delivery tube cannot kink, since the downward bend is on the metal portion of the handle. Any shape of front edge or size of tray can be made for any special purpose where portability is an object, and the delivery tube can be made

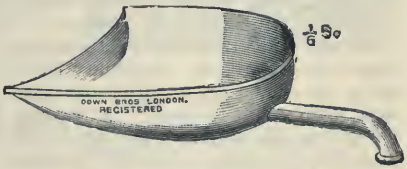

Fig. 83.

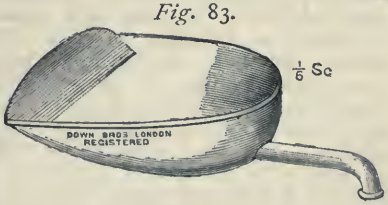

Fig. 84.

telescopic, or to screw off and on the tray. In perineal and uterine cases these trays will be found invaluable. Messrs. Down Brothers, 5 and 7, St. Thomas's Street, London, S.E., are the makers, and they have carried out my suggestions admirably.

Lamp and Vapour Bath (Portable).—Messrs. J. Foot & Son, of 62 and 63, New Bond Street, have introduced an appliance (*Fig.* 85) for the administration of these baths, which has the merit of being easily portable. The box which surrounds the patient's body, except the head, is made to fold up, and the entire weight of the apparatus and heating arrangements (either gas, oil, or spirit, may be used) is only a little over 40 pounds. The main improvement of this appliance over many others is, that the heating stove is outside the bath, and the fumes need not be allowed to enter the bath cabinet. A small headrest for the patient would be an improvement, but this can easily be added. The patient sits in the erect position while the bath is administered, and this has its advantages in respect to portability and the space occupied when in use; but when such baths are used for invalids or delicate persons, the semi-reclining or nearly horizontal position is much better, as the strain upon the heart is diminished when the skin and blood vessels commence to relax. This is a matter of detail upon which the manufacturers would no doubt meet the views of physicians ordering the bath. The stove used for heating the bath is the best we have yet seen, and is constructed with a clear understanding of the conditions required for such baths. In almost every case, it is not a dry hot air that we need, nor a steam super-saturated with water, but a moist warm air, *i.e.*, a true vapour. The lamp provides for either of these, and has special arrangements for securing the latter. We notice that the manufacturers fall into the usual technical error in calling this a "Turko-Russian" Bath. The name, "Turkish Bath," is only applicable to baths in which the whole body is exposed to dry hot air, and in which the patient breathes the air at the same temperature as that to which the body is exposed. The term "Lamp Bath," is correct for a bath when the body is exposed to hot air, and the patient breathes the air at the ordinary temperature of the room. The same applies to the word, "Russian Bath." This term is only applicable to baths in which the patient breathes the steam in which the body is immersed. It is a matter of great consequence as to whether we mean a patient to take a Turkish, Russian, lamp, or vapour bath. Many for whom the first two might be contra-indicated, might derive advantage from the latter, and yet this mistake in naming baths occurs constantly in medical writings. For this reason we call attention to it.

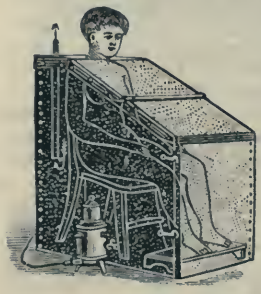

Fig. 85.

Metal Case for Pocket Knives.—We suggested last year that surgical pocket knives should be provided with simple metal cases to protect the blades. Messrs. Sumner & Co., of Liverpool, have sent us a specimen of a flat metal case which just covers the knife without practically increasing its bulk. We would strongly recommend our readers to use these cases, as they keep the instrument clean, light and aseptic, and their cost is nominal.

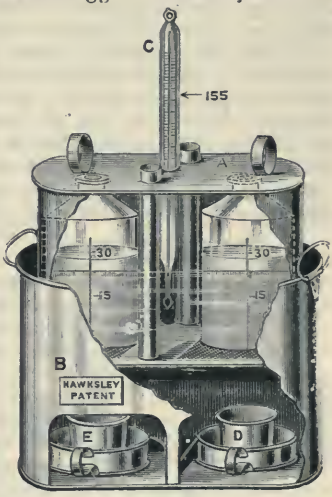

Fig. 86.

Milk Sterilizer.—As a result of careful trial of the best methods of sterilizing milk, Mr. Hawksley has produced a patent appliance, the construction of which will be fairly well understood from the illustration (*Fig.* 86). Our readers who are interested, should apply for a pamphlet issued by Mr. Hawksley, 357, Oxford Street, London, W.

Mouth Gag. *W. Arbuthnot Lane, M.S., F.R.C.S.*

The gag depicted in the diagram (*Fig.* 87) has been made at my suggestion on the principle of Mr. V. H. Wyatt Wingrave's excellent instrument, and will be found most useful in all protracted operations within the mouth. When in position behind the last molar teeth, it is self-retaining, occupies but little room, is self-expanding, and rapidly removable. In operating on cleft palates, etc., it has given entire satisfaction, and I use it in preference to any other gag. The makers are Messrs. Down Brothers, 5 and 7, St. Thomas's Street, London, S.E.

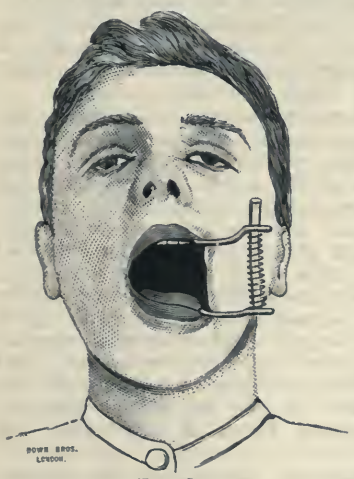

Fig. 87.

Nasal Speculum.—A self-retaining wire speculum, introduced by Messrs. Ferris & Co., of Bristol, is a very great improvement on specula of the same class, adapting itself better to the nose, and being very much lighter than those ordinarily sold. The advantage of

this form of speculum is that it leaves both hands free for any operative work that may be necessary. The disadvantage is that the pressure they exert upon the nasal mucous membrane is sometimes more than is actually required, and causes pain. This can easily be obviated by the use of an ordinary indiarubber band, which can be slid up and down the spring, according to the pressure required. When the instrument is not in use, the same band draws the blades of the speculum together, and makes it more portable. This little addition will be appreciated by those who try the instrument upon themselves.

New Ligature Trough.—The accompanying illustration (*Fig.* 88) represents a new ligature box, suggested by Dr. S. King Alcock, of Burslem, which has been designed to secure the advantages of compactness and absolute watertightness, which hitherto have not been combined in any one apparatus. The trough is made of earthenware, and is fitted with three reels of the same material, placed in the short axis, and has a detachable plate-glass cover, a narrow layer of indiarubber bordering the under surface. When the reels are in position, and the trough filled with carbolic or other solution, the cover is clamped down by means of screws, the free ends of the ligatures being drawn out previous to the clamping of the cover, between its rubber lining and the edge of the trough, so that they can be withdrawn until the supply on the reels is exhausted. The screws may be slightly relaxed when the thicker sizes of ligatures are being used. The apparatus will be found very useful, more especially for private use, and the makers are Messrs. Down Brothers.

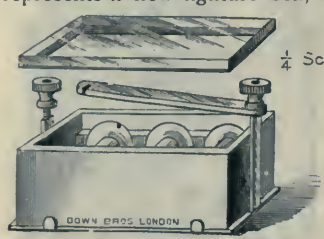

Fig. 88. ¼ Sc

Phonendoscope.—This is a new instrument for assisting the ear in determining the various sounds in the human body. Its object is to render audible all sounds, whether natural or caused by morbid conditions of the human body. They can be heard with much greater intensity and within much narrower limits than has hitherto been possible with the ordinary stethoscope. At the same time it conveys with greater accuracy the nature of the sounds. It is shaped like a large watch, the front part being composed of two discs, one lying above the other. The interior disc is the more sensitive; the second disc can be easily taken off, leaving the interior one uncovered. This instrument appears likely to take the place of the ordinary stethoscope, and Messrs. Sumner & Co., of Liverpool, who have brought the instrument under our notice and at the moment of going to press, inform us that the demand for it is very great. It costs 25/-.

Pill Box Shoot.—We noticed last year the bandage shoot, introduced by Messrs. Reynolds & Branson, of Leeds. This firm have

now brought out a pill-box shoot, the value of which will be at once recognized. It consists of a series of tubes of different sizes, each tube being filled with pill boxes. At the bottom of the tube there is a stand, upon which one box from each tube drops, so that the dispenser has always before him a row of pill boxes of different sizes. As he removes one box, another drops down to fill its place, until all are exhausted. If, then, there is a vacancy in the row of pill boxes, he knows that one tube wants refilling, so that nothing but neglect will allow the stock to run out. The economy of time, which this arrangement affords, will secure for the invention a large sale amongst all who become acquainted with it, and we cannot too strongly recommend it to all who dispense medicine.

Pleximeter.—We have received from Messrs. Ferris & Co., a pleximeter and percussor, small enough to be carried in the pocket. The pleximeter is made so as to fit the finger, the percussor being of glass. It is a very clever little arrangement for those who prefer the use of the pleximeter in physical diagnosis. It is packed in a metal case, and costs 4s.

Plaster of Paris Bandages.—The firm of A. de St. Dalmas & Co., of Leicester, have devoted great attention to the manufacture of plaster of Paris bandages which shall not have the disadvantages so commonly met with in both the extemporaneous and prepared bandages of this kind. They have succeeded in producing one which is not affected by age or exposure, which hardens rapidly, and is free from grittiness. The greater cleanliness during application is a very great recommendation to these bandages for use in private practice ; and all our surgical friends who are using them speak highly of them, and the economy of time effected.

Pneumatic Ear Pillow.—Those who have to remain long in bed often complain of the pain caused by the pressure of the pillow on the ears. The pneumatic ear pillow is an india-rubber tube filled with air, made to surround the ear and relieve it of all pressure. It is fixed in position over both ears by appropriate fastenings (*Fig.* 89), and it is surprising the amount of comfort it gives to the patient, even when the softest pillows fail to secure rest. Messrs. Reynolds & Branson, of Leeds, are the manufacturers of this novel and practical appliance.

Fig. 89.

The *Oriole Pillow Sling* is another invention designed to meet the troublesome hardening of the pillow under the pressure of the patient's head. By means of straps fastened to the top and bottom rails of the bed, the pillow is slung hammock-fashion, on a stout piece of canvas. The result is that the weight of the head is evenly distributed, and the pillow obtains a degree of elasticity under pressure, which is particularly agreeable to invalids. This arrangement, which is the invention of Miss Gertrude Weatherly, also permits of a free circulation of air

round the pillow, so that heat does not accumulate. The straps by which it is fixed are also useful in supporting the weight of the bed clothes, and may be used by patients to assist themselves in rising. It is a simple and inexpensive appliance, and has been already adopted in several hospitals. Messrs. G. Lephett & Co., 21, Leece Street, Liverpool, are the manufactures.

Rectum Speculum.—This has been designed by Mr. E. C. Ryalls, M.R.C.S., and is manufactured by Messrs. Allen & Hanburys. It is distinctly a new departure in rectal specula, and is a most practical instrument for all the purposes of rectal surgery. Its construction will best be understood by reference to the engravings (*Figs.* 90 and 91). A

Fig. 90.—Speculum closed for insertion in rectum.

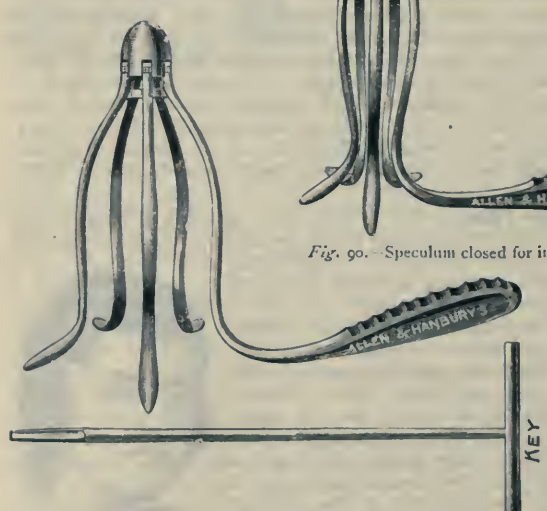

Fig. 91.—Speculum opened for rectal inspection.

key is provided by which the blades can be opened to any extent that is necessary. It will be seen that when inserted, the rectal wall can be fully stretched, and the mucous membrane exposed to view between the blades. When in use it opens up a wide field for inspection, and allows a large surface for the application of the cautery

or other agents. As the whole speculum takes to pieces, it is easily kept clean.

Safety Pin (Patent Locking).—This is the very ingenious invention of Mr. William Robb, of Kincardine O'Neil, N.B. The pin (*Fig.* 92 does not differ in appearance from an ordinary well-made safety pin, but it has the advantage of locking automatically when it is closed, and it does not open again until a small spring is pressed. The advantage of having safety pins which we absolutely rely upon not to come unfastened is manifest, and we have carefully tested these pins to see if they were troublesome to release when removing a bandage. We do not find this the case, and we can congratulate Mr. Robb upon his invention, which will be appreciated by the medical profession and all who use safety pins. The construction of the pin will be easily understood from the diagrams, which shows a section of the head of the pin when closed, and also the way the pin is released by pressure in the direction of the arrow (*A*).

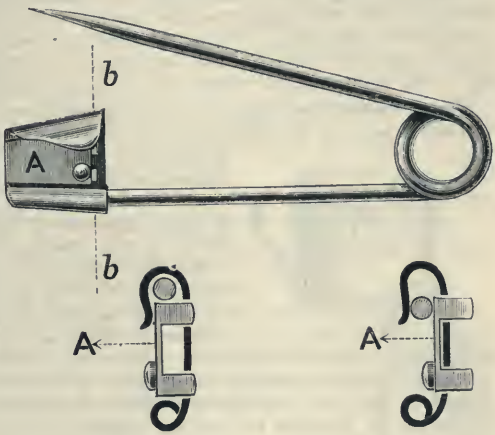

Fig. 92.

Separator and Probe. *A. Marmaduke Shield, F.R.C.S.* This instrument (*Fig.* 93) may be used as a separator, *i.e.*, to separate

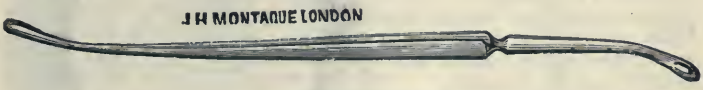

Fig. 93.

a vein from an artery, in the operation for varicocele or varicose veins, to separate the dura mater from the bones, to "shell out" a sebaceous cyst, or to peel away vessels from an enlarged gland in the neck. Being provided with an "eye," it serves as an aneurism needle, and may be used to "under run" adhesions or vessels. It may be used also for carrying a ligature through the pedicle of an ovarian cyst or a cancerous testis. The probe end serves also as a searcher for carious bone, foreign bodies or gall stones, should an operation in the gall bladder be contemplated. The probe terminates in a deeply-grooved director, and thus the instrument may be used in external urethrotomy,

for slitting up a fistula, or especially for dividing the stricture in hernia, the probe-end of the director easily slipping into the abdomen past the constriction. Indeed, this simple instrument may be useful in almost any operation, and it can be carried in an ordinary dressing case. I derived the primary idea of this instrument from the "separator" used by those who operate on the spinal cord and brain for peeling away the membranes. A "separator" is used by physiologists, and Mr. Treves has employed this in surgery. The instrument is made by J. H. Montague, 101, New Bond Street, London, W.

Sister Louise Ice Cup.—This improved form of ice cup (*Fig.* 94) possesses several advantages in use for both nurse and patient. The old method of keeping the ice suspended on flannel or lint for purposes of drainage often causes fluff or hairs to adhere to the ice, and a certain amount of time must be taken up in tying the covering on a basin or cup, whilst the edges also are apt to drip. All this is avoided by the perfect drainage and cleanliness secured by the improved ice cup. It is easily filled, and is more adapted to the wants of a sick-room when ice is ordered to be sucked, whilst at its moderate cost, its expense would soon be covered in saving of lint or flannel. The more substantial form in earthenware should prove very useful at the bedside of hospital patients, and the more ornamental shapes will doubtless be welcomed by the vast number of private nurses who wish to secure for their patients, comfort and refinement. It may be obtained of Messrs. Down Brothers

Fig. 94.

Surgical Pocket Knife (Aseptic).—Messrs. Sumner & Co. have introduced a surgical pocket knife, which opens and shuts with ordinary clasps, the handle being made of metal, and it contains two blades. It is a very practical and inexpensive knife, and will be appreciated on account of the facility with which it can be cleansed.

The Arteriometer and Sphygmodynamometer have been designed by Dr. George Oliver, to meet his requirements in investigations connected with arterial pressure and the varying diameters of arteries in health and disease. They are made by Mr. Hawksley, Oxford Street, London.

Fig. 95.

The *Arteriometer* (*Fig.* 95) is an instrument about the size of a watch,

through the face of which may be seen a dial divided on its margin into 4 spaces, representing "millimetres," which are again divided into $\frac{1}{10}$th mm. The instrument is furnished with two foot rests, which are kept projected from the case by a strong spring; between these foot plates is an artery pad, connected by a rod with the dial movement. By an ingenious mechanical device it is arranged that the measurement always begins at a constant 'zero.' On applying the instrument to an artery *and making pressure*, the dial is carried round by the pointer until a certain degree of pressure has been made, when the pointer suddenly leaves the dial at rest, moves in the opposite direction, and so continues until the artery is closed. It is easy with this instrument, and a delicate finger applied to the artery, to measure its diameter, to the $\frac{1}{20}$th of a millimetre.

The *Sphygmodynamometer* is similar in appearance to the arteriometer, excepting the foot plate, which is *arched* to *avoid pressure* in the neighbourhood of an artery. The scale, which is of spiral form, to prevent confusion when the pointer has made more than one revolution, is marked into 10-gramme divisions up to 500 grammes, and there is sufficient space between each 10 grammes for estimating pressure to 2 grammes. The instrument is extremely sensitive, and by watching the pointer before occlusion of the artery, the usual sphygmoscopic movements are well indicated.

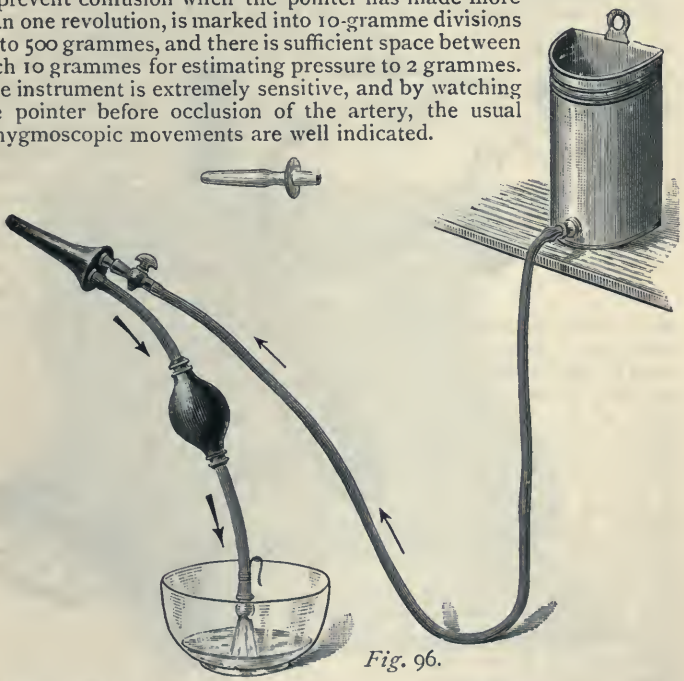

Fig. 96.

The "Onah" Douche.—This is a decided improvement upon the existent means available for giving vaginal douches. As will be seen from the engraving (*Fig.* 96), it is provided with a separate outflow

tube for the escape of the used liquid, so that it can be used in bed without wetting the bedclothes; it has besides, a bulb and valves in the outflow tube, which are constructed and arranged in such a manner that the expansion of the bulb draws the liquid from the douche can through the vagina, thus giving it an additional impetus and greatly increasing its cleansing action, as well as causing all the water in the douche can to pass through the vagina with a good flow; whereas, with an ordinary douche, the last part of the water in the can only trickles through the vagina with very little cleansing effect, and, moreover, the douche can has to be placed at a considerable height, while with the "Onah" the douche can may be put in any convenient position, at a moderate elevation above the body. The whole arrangement is very practical, and we can highly commend it after careful trial. Messrs. J. G. Ingram & Son, of the "London Rubber Works," Hackney Wick, London, E., are the manufacturers.

The Treble Spring Truss.—The treble spring truss (*Figs.* 97, 98 and 99), invented by Dr. Ramage, is thus named because it is so constructed as to admit of, according to the requirements of the case, three springs of different strengths being used, and these may be readily interchanged by the patient without the aid of any instrument whatever. It has none of the usual defects found in other trusses, and possesses, in addition to the good points of the more modern instruments, several unique characteristics of its own, which greatly add to its utility and comfort in use, and render it very convenient. It is neat in appearance, light in weight, simple in construction, effective in use, and is applicable to the treatment of every form of rupture. It consists of three parts, *i.e.*, a back pad, to fit over the spine, a spring, and a head or pad; all of these may be attached to and detached from each other with the greatest of ease and celerity. The spring is fitted to the back

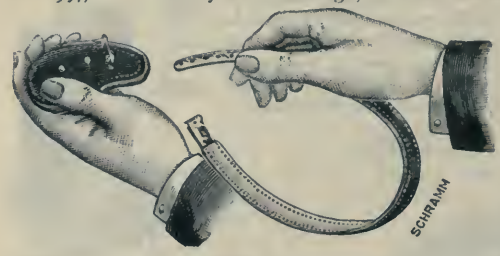

Fig. 97.

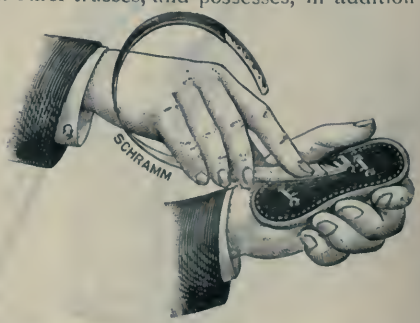

Fig. 98.

pad by a patent hinge joint, which cannot come undone while being worn. The head slides on the spring, and is readily fixed at one of several points by a hinged-pin or button, which mechanism allows the length of the truss to be varied at will,

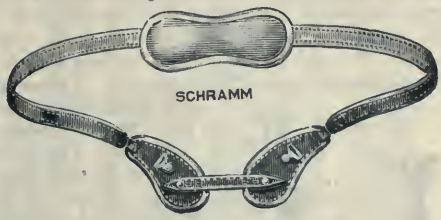

Fig. 99.

should the patient alter in size. The springs are stamped with two numbers to indicate their size and strength. Should a spring unfortunately be broken, the patient has only to forward to the maker the numbers stamped upon it in order to have it replaced at once, and, unlike other trusses, the whole instrument is not rendered useless. It ought, therefore, to prove most economical, as any part if damaged, can be easily and speedily renewed, and fitted by the wearer. The maker is Mr. Schramm, of 24, Great Castle Street, Cavendish Square, W.

Fig. 100.

Transfusion Apparatus.—The advantages claimed for this apparatus (*Fig.* 100) by Dr. L. J. G. Carré, who suggested it, are : (1,) Its absolute

simplicity. Transfusion can be quite readily performed absolutely single-handed; (2,) Its compactness. Everything that can possibly be required for the safe and successful performance of the operation is immediately at hand; (3,) The small size of the complete case, so that it may serve as one of the invariable contents of the practitioner's midwifery or surgical bag. The case, which measures 2½in. by 3½in., by 7½in., is lined with a special leather, which will wash, so that the whole apparatus can be kept aseptic. Comprised in the case are all the instruments necessary for the performance of saline infusion. The great advantage offered by this apparatus is, that all the necessary implements are always ready when an emergency occurs. It is manufactured by Mr. J. H. Montague, 101, New Bond Street W.

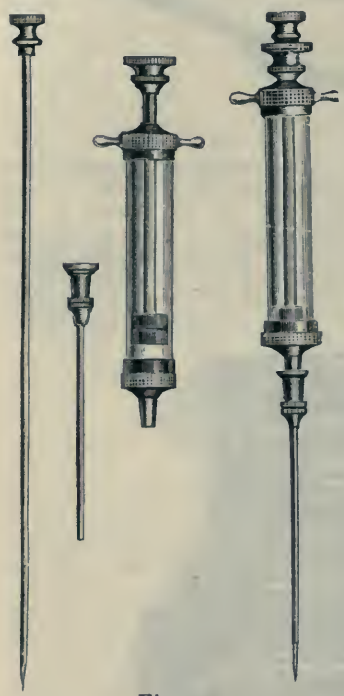

Fig. 101.

Trocar Syringe.—This is a very useful instrument (*Fig.* 101) for exploring suspected cavities, introduced by Messrs. Ferris & Co., of Bristol. It takes the form of a vulcanite syringe, the needle of which forms a small cannula, about 2½ inches in length, and into which is fitted a trocar, which passes through the piston of the syringe, and which is removable after the puncture has been made.

The finger is then placed over the aperture in the head of the syringe from which the trocar has been withdrawn, and the syringe can be used for aspirating the contents of the cavity. The trocar syringe will be found very useful for many purposes in surgery, and a particularly convenient instrument for the practitioner. The cost is only 5s. 6d.

Urinary Test Stand.—Messrs. Ferris & Co., of Bristol, have introduced a new urinary test stand (*Fig.* 102) for the consulting room, which is compact, and remarkably complete. In addition to the ordinary stand for test tubes, reagents, and spirit lamps and urinometer, there is a drawer containing glass rods, pipette, test papers, microscopic slides and cover glasses. A well-made stand of this kind is an essential part of every medical consulting room, and those of our readers who are wanting one, cannot do

better than obtain this, as although it is well finished, and very complete, it is of moderate price.

Fig. 102.

Uterine Tube (Hubert's).—This tube is made wholly of metal, and is so shaped as to adapt itself to the contour of the vaginal wall, rendering its insertion easy, and its application effective. It is supplied by Messrs. Ferris & Co., of Bristol.

PROGRESS OF PHARMACY.

Anti-Diphtheritic Serum Exsiccated. — The bulky nature of the injections which doctors using anti-diphtheritic serum are required to carry about with them, is considered one of the chief objections to this method of treatment. Messrs. Burroughs, Wellcome & Co. were the first investigators to discover a method of preparing a scale serum which, when dissolved in two and a half or three times its weight of water, maintained the full potency of the liquid serum of the laboratory. One great advantage of the dried preparation is that it can be used with smaller and less formidable looking syringes than those which are used for injecting such large quantities as 20 c.c. of the serum. It is issued in the form of beautiful, lustrous, golden scales, and keeps far better than the liquid. It is, therefore, specially adapted for transport to tropical countries, and, we are told, has been exported in large quantities to Africa, Australasia, India, and the East. Each bottle contains one gramme of the serum, and bears a label on which is registered the date of issue, the immuni-

sing power per body weight, and the signature of the bacteriologist who is responsible for the guarantee. There would seem to be a wide future in store for this substance.

Argentamine.—This is a colourless solution of a non-coagulable silver salt—ethylenediamine silver phosphate. It is equivalent to a 10 per cent. solution of silver nitrate. It has been employed for urethral irrigation, in the strength of 0·1 to 0·25 per mille solution. For injections it has been used in the strength of 1 to 2 c.c., of a 1 to 2 per mille solution. Its advantage over ordinary nitrate of silver is self-evident. Messrs. Zimmermann are the British agents.

Bronchi-fume.—A new asthma powder, which we reported upon and recommended for trial last year, is produced by Mr. W. A. Manning, Ashtree Villa, Highbridge Road, Wylde Green, Birmingham. We regret that last year we gave the address as London.

Chloralamid.—This has been referred to in previous editions of the "Medical Annual," and its valuable hypnotic properties are well known. Messrs. Zimmermann & Co. are the British agents.

Chrismoids (Patented).—Chrismoids are gelatine capsules containing various antiseptic ointments made with chrisma, an inoxidisable hydrocarbon. They are particularly to be recommended in midwifery and gynæcological practice, and in the lubrication of catheters will be found to remove a great source of danger. Each capsule contains enough ointment for the complete inunction of the hands. Chrismoids are prepared with the following antiseptics: bichloride of mercury, carbolic acid, boric acid, lzal. Each chrismoid is stamped with the name of its contents. They are put up in boxes containing one dozen, at 6d. per box. Their elegance is worthy of the firm who have introduced them—Messrs. Allen & Hanburys.

Coca Wine Extract.—Messrs. Armbrecht, Nelson & Co. have issued amongst their numerous preparations of coca a liquid extract which is particularly valuable as a medicinal agent, because it can be employed in any wine or vehicle which the patient's state may demand. We have used it in many cases as a remedy for insomnia with great success.

Cod-liver Oil and Hypophosphites.—Messrs. J. Robinson & Co., of Norwich, have introduced a preparation which forms a perfect emulsion, pleasant to the taste and easily digested.

Diphtheria Antitoxin.—The concentrated serum prepared under the direction of Dr. H. Aronson is now obtainable from Messrs. A. and M. Zimmermann; 1 c.c. contains 100 units of immunisation. It is sold in vials of 5 c.c. and 10 c.c.

Formalin.—This is a limpid, colourless liquid, containing 40 per cent. of formic aldehyde. It is not only a powerful disinfectant and deodorant, but is very valuable for hardening microscopic preparations and museum specimens, which it also preserves. It is non-poisonous and not corrosive. Messrs. Zimmermann & Co. are the British agents.

Glutone Peptone Sublimate.—This is being largely used now in Ger-

many as an anti-syphilitic. A Pravaz syringeful of the solution is equal to $\frac{1}{8}$ grain of mercuric chloride. Messrs. Zimmermann & Co. are the British agents.

Jelloids of Iron and Strychnia.—We have previously called attention to Messrs. Warwick Bros. elegant jelloids of iron, of which we have had a large and satisfactory clinical experience. The latest product of this Firm is a jelloid composed as follows: Pil Blaud gr. v, liq. arsenicalis ♏iij, strychnia gr. $\frac{1}{50}$. It would be difficult to find a more useful tonic, put up in such a portable and presentable form.

Liquor Hepaticus c̄ Pepsin.—This is a solution of liver-wort, manufactured by Messrs. Battley & Watts, and is probably the best obtainable preparation. This drug is not as largely used as it should be as an hepatic and stomachic stimulant, but when a reliable preparation is employed the results are very satisfactory.

Liquor Pruni Serotin.—This is a liquor of standard strength, which has been volumetrically estimated for hydrocyanic acid. It is the best and safest way of administering this drug to children in cases of bronchitis and catarrhal affections. Messrs. Battley & Watts are the manufacturers.

Loretin (Meta-Iodo-Ortho-Oxyquinoline-Ana-Sulphonic Acid).—According to the report of Professor Schinzinger at the Nuremberg Scientists' Congress in 1893, this is an antiseptic substance which is specially adapted for use as a substitute for iodoform. It occurs in the form of a yellow crystalline powder, which is much like iodoform in appearance, but, unlike that substance, is completely odourless, It has the further great advantage of not producing the slightest toxic effects or causing eczematous development. It may be used equally well as a dusting powder, or as an insufflation to be blown into hollows, cavities, etc. The healing of a wound treated with it is usually unaccompanied by fever, and progresses without festering. It is manufactured by Messrs. Meister, Lucius, & Brüning, of Hoechst-am-Main.

Magnesium Sulphite.—Dr. Brownlow Martin has proved the influence of this salt in dissolving the diphtheritic membrane, and Messrs. Burroughs, Wellcome & Co. have introduced the salt in tabloid form as a convenient method for its administration. The tabloid being sucked slowly in the mouth brings the solution of the salt into constant contact with the affected part.

Menthol Snuff.—This is a combination of menthol, cocaine ($\frac{1}{6}$ per cent.), ammonium chloride, camphor, and lycopodium, produced by Messrs. Burroughs, Wellcome & Co., and put up in elegant little snuff-boxes. This will prove useful for many cases of chronic nasal catarrh, and should become popular.

Mist. Acidi Carbolici (pro Pertussi). — Under this name Messrs. Sumner & Co., of Liverpool, manufacture a very elegant preparation composed of ipecac., belladonna, and carbolic acid (grains $\frac{1}{2}$ to ℥j), which has been used with success in the treatment of whooping, and spasmodic coughs in children. Like most of Messrs. Sumner's preparations it is economical as regards cost, and it will be far

safer to order in bulk for dispensary and hospital practice than to trust to the carbolic acid being properly incorporated in the dispensing of an extemporaneous prescription.

Morstadt Cachet.—We have previously called attention to the great usefulness of the Morstadt cachet as a means of dispensing insoluble and unpalatable powders. Practitioners who dispense their own medicines will find that it is less trouble to put up an elegant "cachet" than to fold an ordinary powder, while the patient appreciates the tasteless dose which is so easily swallowed. Messrs. Thos. Christy & Co. have sent us some samples of these elegant cachets in various colours, which may prove of practical advantage in distinguishing between different medicines which may be contained in them. They also send some "cachets" upon which the name and address of the chemist is either printed or embossed. There seems to be no advantage in this. The desire of the chemist to keep his name and address before the public is laudable enough, but it is not necessary that our patients should be literally asked to swallow it. The surface of a cachet presents facilities for advertising, but the human stomach does not appear to us a suitable medium.

Orexen Hydrochloride.—The employment of this substance as a stomachic and tonic in anorexia is increasing in spite of its bitter and pungent taste. It is best given in wafer form, with a little soup immediately afterwards. Messrs. Zimmermann are the British agents.

Organic Extracts.—Messrs. Chaix & Raimy, of Paris, have devoted very great attention to the subject of organic extracts, and the following is a list of those now obtainable from their laboratories : –

Extract : Orchitic or Testicular	Extract : Spleen and Medulla of Bone
,, Grey Matter of Brain (*Cerebrine*)	,, Lymphatic Glands of Spleen and Medulla of Bone
,, Renal (*Nephrine*)	,, Muscular
,, Pancreatic	,, Pulmonary
,, Thyroidal	
,, Hepatic	
,, Suprarenal	

These extracts are made in two forms : (1,) Fluid for hypodermic injection, 17s. 6d. per case of 12 tubes ; (2,) Tablets for administration by the mouth, 2s. 6d. per bottle of 100. Messrs. Ferris & Co., of Bristol, are the English agents, and they also supply the special syringes for the use of these fluids by hypodermic injection.

Organic Extracts as Palatinoids. Messrs. Oppenheimer, Son & Co. have put up in the form of their well known palatinoids various organic extracts of the glands and tissues. The extract, after having been carefully selected, is pulverised and mixed with chloride of sodium, and placed in a soluble cachet which is hermetically sealed. This renders it impossible for the extract to undergo decomposition from exposure to the air, and serves as a ready and convenient method of administering these agents. The following samples of these preparations have been received : "Red medulla," "supra-renal capsules," "Thymus gland," "Cerebrin," "Ovary," "Thyroid powder." We

believe that these preparations will be found a very reliable method of using those medicaments.

Tabloids of Organic Extracts.—Messrs. Burroughs, Wellcome & Co., with their characteristic energy, have devoted great attention to the supply of organic extracts in their well known tabloid form, and they have furnished us with a good deal of information as to the reputed therapeutic efficacy of the extracts which they are now submitting for professional trial.

The following is a list of the preparations: *Pituitary Body*, used for restoring perverted nutrition of brain and nervous system, and likely to be useful for "acromegaly." *Pineal Gland*, also recommended for functional disorders of the brain. *Salivary Gland*, "being tried by clinical observers." *Lymphatic Glands* have been employed in lymphadenoma, and in exophthalmic goitre. *Thymus Gland*, used in Graves's disease, anæmia, leucocythæmia and chlorosis. *Kidney Substance*, used for "impaired nitrogenous transmutation, which may arise from abeyance of this function of the renal gland." *Spleen Substance*, "used for various diseases of the blood." *Suprarenal Substance*, a dose of $\frac{1}{800}$ of a grain of the active principle produces distinct physiological effects on the heart and arteries. The absence of the secretion of the gland causes prostration, inanition, and death. None of the organic extracts at present in use, if we except the proved results of "thyroid," is likely to prove of more clinical value. *Pancreas Substance*; this is said to be useful in some cases of diabetes, and is supposed to effect carbohydrate metamorphosis. *Ovarian Substance*, used for the nervous manifestations and irregular tissue changes which follow the menopause. *Cerebrinine*, used for chorea, perverted sexual habits, hysteria, etc.; *Didymin* is said to be aphrodisiac, and to cure perverted sexual habits. *Red Bone Marrow*, used for hyperfluidity or non-coagulability of the blood elements. *Uterine and Fallopian Tube Substances* used for cachexia due to removal of these organs.

Paraform.—This is paraformic aldehyde, which forms a white insoluble powder, and has been used as an internal antiseptic. Messrs. Zimmermann are the British agents.

Pepsencia.—A solution of the essential organic ingredients of the gastric juice, extracted directly from the peptic glands of the stomach by Messrs. Fairchild Bros. & Foster, of New York. This digestive essence possesses remarkable activity, and is superior to the usual wines, elixirs, etc., of pepsin, which are made from saccharated pepsin, and which often contain but the merest trace of the true digestive ferment. It is a powerful digestive of milk, albumen, fibrin, and gelatine. It exhibits in a remarkable degree the coagulating power upon milk, which has been shown by physiologists to be characteristic of the gastric juice. Messrs. Burroughs, Wellcome & Co. are the agents.

Petroleum Emulsion with Hypophosphites.—Messrs. Sumner & Co. send us their combination which is now being largely used in the treatment of consumption, bronchitis, and wasting diseases, as a substitute for cod-liver oil.

Phenocoll Hydrochloride.—This has similar properties to phenacetin, and has an advantage over many remedies of its class in the fact that it is readily soluble in water. Messrs. Zimmermann.

Phenosalyl.—This is a clear, syrupy liquid, consisting of a mixture of benzoic, salicylic, and carbolic acids, melted together and dissolved in lactic acid. It possesses an antiseptic power considerably superior to that of carbolic acid. It has been used by Duloroy in the sterilisation of instruments, of gauze, and of different organic substances like blood, as well as decomposing urine and the saliva of consumptives, with most encouraging results. A communication by Professor Fraenkel summarizes the advantages of phenosalyl over other antiseptics as follows: Easy solubility in water, no danger of toxic symptoms, a pleasant and non-persistent odour which does not cling about the hands or clothes, no corrosive action on skin or mucous surface. It is manufactured by Messrs. Meister, Lucius & Brüning, Hoechst-am-Main.

Rubidium Iodide.—This has been extensively employed on the Continent as a substitute for iodide of potassium, and it is claimed for it that it has a less depressing effect upon the heart, and is indicated in cases when there is cardiac debility. Messrs. Zimmermann.

Sprays and Gargles.—It is not always easy to arrange a formula for a single spray or gargle, so that the patient can have it dispensed in an easily portable form. It is for this reason we are glad to see that Messrs. Burroughs, Wellcome & Co. have put up Dr. Carl Seiler's formula into tabloids, which merely require to be dissolved in water to make the required solution for the gargle or spray. This includes the bicarbonate, benzoate, biborate, and salicylate of sodium, eucalyptus, thymol, menthol, and ol. gaultheriæ, so that it is a very suitable application, when the main indication is the use of an alkaline antiseptic for cleansing purposes.

Taka-Diastase.—This product is the result of a discovery made by a Japanese chemist, Jokechi Takamene. It is a ferment obtained from a fungus, and possesses remarkable diastatic properties. It is capable of converting one hundred times its own weight of starch into sugar in ten minutes. It is put up in the form of a fine powder by Messrs. Parke, Davis & Co., and may be used with very great advantage in cases of amylaceous dyspepsia in doses of 1 to 5 grains.

Taurocholate of Soda.—After a long series of experiments Messrs. Burroughs, Wellcome & Co. have been enabled to overcome the tendency of this drug to deliquesce, and have produced it in "tabloid" form.

Trikresol.—This is a colourless, oily liquid consisting of 2½ per cent. of pure cresol dissolved in water. It has been used as an improvement upon carbolic acid as an antiseptic. Messrs. Zimmermann are the British agents.

Trop-cocaine.—This is now prepared for ophthalmic use in very fine, easily soluble tabloids, each representing $\frac{1}{30}$ grain, by Burroughs, Wellcome & Co.

Urinary Tests.—Messrs. Oppenheimer, Son, & Co. have used their bi-palatinoid method to put up in a convenient and portable form some tests for sugar and albumen. Fehling's sugar test is provided for by a bi-palatinoid which, when dissolved in water, makes a fresh and reliable Fehling's solution. Pavy's test for sugar is also arranged in the same form, the blue colour formed by the solution of the contents of the palatinoid being instantly discharged by saccharine urine. The ferrocyanide albumen test is also arranged for by a bi-palatinoid, which, when dissolved, develops hydro-ferrocyanic acid, which in the cold will precipitate a mere trace of albumen. This test is most valuable because it permits of the elimination of the nitric acid bottle, which most of us regard as an abomination on account of the damage it does.

Urotropine.—The full name of this substance is hexamethylenetetramine. It occurs as a white powder soluble in water. It is a solvent of uric acid, and prevents ammoniacal decomposition of urine. Messrs. Zimmermann are the British agents.

DIETETIC ARTICLES.

Albumen Maltose.—This is a soluble, albuminous food, for which Messrs. A. & M. Zimmermann are the British agents. It is practically a new addition to our dietetic articles for invalids, and represents a highly nutritious, but easily digested food. It is well worthy of extended trial at the hands of the medical profession, and we propose to give it our attention and to report further upon it.

Cocoagene.—Under this name Messrs. C. Barry & Co., of Finsbury, London, have introduced compressed tablets of pure cocoa essence, each tablet being sufficient to make a cup of cocoa. The method is particularly convenient, and we have carefully examined the quality of the cocoa entering into the composition of these tablets. We find that they consist of pure cocoa of a high grade, from which the larger portion of the fat has been removed, and that there has been no addition of starchy or chemical matter. They can be confidently recommended for use, and will be found economical as well as reliable.

Cytos Bread and Flour.—We have examined specimens of these products of the latest development of scientific milling, and we find that the bread, while far more nourishing and digestible than that ordinarily sold, is of a very pleasant flavour, and will, no doubt, meet with the appreciation its merits deserve.

Diabetic Foods.—We have received from Mr. E. Blatchley, of 167 Oxford Street, London, a large number of samples of diabetic foods, representing upwards of thirty distinct varieties. This is sufficient evidence of the exertions which this well-known manufacturer has made to mitigate the severity of the diet of patients suffering from diabetes. The selection of the various forms of bread and biscuits is so largely a matter of individual taste, that it is better for the

physician to ask for samples of the various kind, and allow the patients to choose those which they find most palatable.

Diabetin.—This has been introduced as a substitute for sugar for diabetic patients. It is a pure levulose and carbo-hydrate food, and is used with benefit by those suffering from glycosuria. Messrs. Zimmermann are the British agents.

Meat Essences.—We have received from Messrs. Halford & Son specimens of their beef, mutton, and chicken jellies. They are undoubtedly the pure essence of the meat, without the addition of any preservative agent, and while representing a higher percentage of nutritive value than many similar preparations in the market, they possess a delicate flavour which is much appreciated by invalids, to whom they can be confidently recommended.

Neo-Kola.—Although the valuable properties of kola as a stimulant which checks rapid waste of tissue during fatiguing exercise, and which, containing as it does more than double the quantity of caffein than the best specimens of coffee, is one of our best cardiac restoratives, it has failed to come as largely into use because its flavour, while not exactly disagreeable, has not been altogether palatable. Messrs. Thos. Christy & Co. have never lost faith in the ultimate triumph of the kola nut over tea and coffee as a beverage, and we have watched their efforts to make this product acceptable to the public with great interest. It was clear that by adding to it 75 per cent. of cocoa, a pleasant beverage of great nutritive value might be produced, but it would fail to obtain the distinctive place which the nut deserves from its own inherent qualities. Messrs. Christy & Co. have lately devised a new process by which the natural flavour of the kola is developed and preserved without the addition of any other substance, with the exception of a trace of vanilla for flavouring purposes. This can be mixed with boiling water and milk, and sweetened to taste in the same manner as a cocoa extract, and constitutes a distinct addition to the resources of the tea and breakfast table. It does not cause indigestion; on the contrary, it rather aids the digestive process, and increases the assimilation of food; it is more sustaining than any other beverage at present in use. The only question is whether the flavour of kola will become acceptable to the palate. Made with milk and sweetened with sugar, we consider it not only pleasant but a decided change from tea and coffee, and we have further found it particularly serviceable in helping us to overtake mental and physical work when feeling fatigued or exhausted. We are inclined to think that Neo-Kola has a great future before it, and that our readers would do well to try it for themselves.

Nutrient Suppositories.—Messrs. Parke, Davis & Co. have introduced some nutrient suppositories, each of which contains about 125 grains of fresh lean beef, almost entirely peptonised. They are not too large, and firm before introduction, quickly melting after they are placed in the bowel. We can highly commend them.

Oatmeal.—As difficulty is sometimes experienced in obtaining genuine Scotch oatmeal, or in other words, the meal sold under the name is often not anything like so good as that obtainable in Scotland, where the public taste is very educated on this point, we are glad to state that Messrs. A. & R. Scott are sending out their new brand Midlothian Oatmeal in sealed bags, so that invalids may be sure of obtaining the right thing.

Panopepton is prepared by Messrs. Fairchild Bros. & Foster, of New York, and consists of the entire edible substance of prime lean beef and best wheat flour, cooked, digested, sterilized, and concentrated *in vacuo*. The trimmed and cooked beef is subjected to digestion strictly to the point of complete solution of its albuminoids, and the cooked wheat to the solution of both its gluten and starch. Panopepton therefore contains all the nutrients of these two great types of food, beef and bread, combined with a delicious restorative. The uses of panopepton are so obvious that it is only necessary to suggest the many directions in which it is indicated as a food : In acute and wasting diseases, in protracted convalescence, in anæmia, in feebleness or deranged digestion, or where there is antipathy to, or inability to gain sufficient nourishment from ordinary foods. It should not be mixed with any other food, but is best taken pure. Messrs. Burroughs, Wellcome & Co. are the agents.

Peptone of Beef.—This preparation, which has been recently introduced by the Liebig Co., represents a very decided improvement upon the extract as originally made by Liebig, and also an advance upon other methods of presenting the nutritive properties of meat in a concentrated and easily assimilable form. To accomplish this, it is not only necessary to present the food rich in albumen, whether it be the natural or artificially added (because such food can be more cheaply and conveniently obtained from eggs or other sources), but it is essential that this albumen should be in the form of peptones or albumoses, in order that an immediate effect on nutrition may be produced. Modern investigation has shown that Liebig was not so foolish as we supposed when he removed all the unchanged albumen and fibrin from his extract, but the same investigation has proved that if we can add albumose and peptone to the extract so prepared, we obtain as a result a substance of higher nutritive value than any of the concentrated essences which have yet been produced. Working on the lines laid down by Professor Kemmerd, the Liebig Co. have now brought forward a Beef Peptone which contains no less than 48·33 per cent. of albumose and peptones, of which only 1·85 is unaltered albumen ; it contains also 8·94 per cent. of nitrogenous meat bases. The taste is agreeable, and we believe that at the present moment it is the most reliable meat essence obtainable.

Peptogenic Milk Powder.—This is a powder which, added to diluted cow's milk to which cream has been added, will bring it to about the same strength and composition as human milk. When infants are deprived of their natural food the peptogenic milk powder is peculiarly

adapted for the preparation of an efficient substitute for use during the entire nursing period. The milk prepared in this way has the digestibility and nutrient value of mother's milk, and is thus obviously the proper food for both healthy and sickly children up to the age of nine months, the natural period for weaning. It is made by Messrs. Fairchild Bros. & Foster, of New York, for whom Messrs. Burroughs, Wellcome & Co. are the agents for Europe, Asia, Africa, and Australasia.

Pilsener Lager Beer.—Messrs. Bruster & Co. having made improvements in their machinery and methods of manufacture of their well-known Lager Beer, the result is a clear, bright, sparkling beverage, which the most delicate invalid may take without any after feeling of heaviness, which often renders our more full-bodied English beers an impossible drink for patients and brain-workers.

Sugar of Milk.—Messrs. Zimmermann & Co. have prepared, by a new process, a particularly pure form of sugar of milk, which is now so strongly recommended in the feeding of infants. An absolutely pure preparation of sugar of milk is very necessary for this purpose, and also for administering drugs in the form of trituration. Messrs. Zimmermann's product will be found very reliable.

Virol.—This is one of the latest and not the least valuable of the productions of the Liquor Carnis Company. It is a preparation of bone marrow, which is an ideal form of fat, because of the readiness with which it is digested. This preparation contains the red marrow, which is considered more blood-making than the yellow marrow. A preparation of the latter substance is produced by the same firm under the name of "Marrol," and is cheaper. In cases where a cod-liver oil substitute is wanted, the latter is an excellent preparation. When it is required to increase the number of red blood corpuscles, as well as to increase the fat, Virol is the form which should be selected. We believe that both these preparations will steadily grow in favour with the medical profession, and do really good work in strengthening the constitutions of patients of the tubercular and anæmic class. It should be remembered that fat is an essential in infant dieting.

Wheat Flour for Infants (King).—Is it possible to produce an infant food which shall be reliable and easily assimilated, at a moderate price? No one doubts the possibility, but the fact remains that most of the best-known infant foods are retailed at a price which places them beyond the reach of our poorer patients. The "Wheaten Food" produced by Messrs. Geo. King & Co., of the Albion Mills, is prepared entirely from wheat and barley malt, without the addition of any chemical matter, the product being thoroughly cooked before it is packed for sale. It represents the nutritive value of the grain in a form rendered easily digested by the presence of malt. It is sold at a moderate price, and has already received the approval of large numbers of members of the medical profession. We are glad to have had this useful addition to the many valuable productions of the same firm brought under our notice.

Lunatic and Idiot Asylums and Homes for Inebriates in Great Britain and Ireland.

We are very anxious to make this list complete, and to give all necessary information; but unless our circular of enquiry—*which in every case is stamped for reply*—is promptly returned, we cannot undertake the responsibility of inserting particulars of an Establishment which may have been closed.

ABERDEEN.—*Royal Asylum.* Res. Med. Sup., Wm. Reid., M.D.; Treasurer, Wm. Carnie, 27, Exchange Street. Access—Aberdeen Station, 1 mile.

ABERGAVENNY.—*Joint Counties Asylum.* Res. Med. Sup., James Glendinning, M.D. Access—G.W.R. Station, ½ mile; L. and N.W. Station, ¾ mile.

ANTRIM.—*Glenside House.* Med. Prop., Dr. C. J. Milligan.

ARGYLL and BUTE.—*District Asylum*, Lochgilphead. Res. Med. Sup., J. Cameron, M.D. Access—Rail to Greenock, thence by Steamer to Ardrishaig, 2½ miles distant.

ARMAGH.—*Course Lodge*, Richhill, 5 miles from Armagh (for ladies only). Proprietors, James and Wm. Orr; Visiting Physician, R. Gray, F.R.C.P.,I. Access—Richhill Station, thence by own Conveyance, 2 miles. *Further information on page* 793.

District Asylum. Res. Med. Sup., Dr. W. Graham.

The Retreat. Proprietors, A. D. Allen & Sons. (For 21 male and 15 female patients, higher and middle class.) Res. Med. Sup., Dr. J. Gower Allen. Access—Richhill, thence cab 1½ miles.

AYR.—*District Asylum.* Res. Med. Sup., C. H. Skae, M.D. Access—Ayr Station, 2 miles.

BALLINASLOE (Co. Galway).—*District Lunatic Asylum.* Res. Med. Sup., R. V. Fletcher, M.D.; Asst. Med. Off., John Mills, M.B. Access—Ballinasloe.

BANFF.—*District Asylum*, Ladysbridge. Res. Sup., David Fowler. Visiting Physician, Wm. Ferguson, M.D. Access—Ladysbridge Station.

BARNOLDSWICK (Yorkshire).—*Greta Bank.* Prop., Mrs. Parker. Med. Sup., Dr. Metcalfe. Access—Bentham Station, 2 miles.

BASCHURCH (Shropshire).—*Borealton Park*, 10 miles from Shrewsbury. Res. Med. Sup., Dr. Sankey. Access—Baschurch Station. *Further information on page* 791.

BATH.—*Bailbrook House.* Prop. and Res. Med. Sup., Lionel A. Weatherly, M.D. Access—Bath, 15 minutes' drive. *Further information on page* 792.

BEDFORD.—*Bishopstone House*, Ashburham road (for 10 females). Prop. and Med. Sup., Wm. Simpson Craig, M.D. Access—Bedford.

Springfield House Asylum; 1 hour from London. Res. Med. Sup., D. Bower, M.D. Access—Bedford, 1½ mile. Mid. & L. & N.W. Railway. *Further information on page* 788.

BELFAST.—*Belfast District Lunatic Asylum.* Res. Med. Sup., A. S. Merrick, M.D. Access—Belfast.

BEVERLEY.—*East Riding County Asylum.* Res. Med. Sup., M. D. Macleod, M.B. Access—Beverley Station, 2 miles.

BIRMINGHAM.—*Birmingham City Asylum*, Winson Green. Res. Med. Sup., E. B. Whitcombe. Access—Winson Green, ½ mile, Soho, ¼ mile.

BODMIN.—*Cornwall County Asylum.* Med. Sup., Dr. R. Adams.

BOX (Wilts).—*Kingsdown House*, 5 miles from Bath. Res. Med. Sup., Dr. H. C. MacBryan. Access—Box.
Further information on page 791.

BRENTWOOD.—*Essex County Asylum.* Res. Med. Sup., Dr. G. Amsden. Access—Brentwood, ½ mile.

BRIDGEND.—*Glamorgan County Asylum.* Res. Med. Sup., H. T. Pringle, M.D. Access—Bridgend, 1½ miles.

BRISTOL.—*Brislington House*, 2½ miles from Bristol. Res. Med. Supt., Dr. B. B. Fox. Access—Brislington, 1⅓ miles.

City and County Asylum. Res. Med. Sup., Harry A. Benham, M.D. Clerk, Arthur Orme. Access—Fishponds Station, 1 mile.

Northwoods House, Winterbourne, 7 miles from Bristol. Props., Reginald Eager, M.D., and T. G. Seymour. Access—Cab from Bristol, or from Fishponds, Yate, or Patchway Stations.
Further information on page 796.

BROMSGROVE.—*Birmingham City Asylum*, Rubery Hill, Barnt Green, Worcester. Res. Med. Sup., A. C. Suffern, M.D. Access—Rubery Station.

BURGESS HILL.—*St. George's Retreat*, Ditchling. Res. Med. Off., Dr. John A. Cones. Access—Burgess Hill Station.

BUXTON.—*Wye House.* Res. Phys., F. K. Dickson, F.R.C.P. Access—Buxton.

CAMBRIDGE.—*County Asylum*, Fulbourn. Res. Med. Sup., E. C. Rogers, M.R.C.S. Access—Cambridge, 3 miles.

CANE HILL, Purley (Surrey).—*London County Asylum.* Res. Med. Sup., Dr. J. M. Moody. Access—Coulsdon Station, 10 minutes.

CARLISLE.—*County Asylum.* Res. Med. Sup., J. A. Campbell, M.D. Access—Carlisle, 3 miles.

CARLOW.—*District Asylum.* Res. Med. Sup., Dr. T. P. O'Meara. Access—Carlow.

CARMARTHEN.—*Joint Counties Asylum.* Med. Sup., Edwin Goodall, M.D. Access—Carmarthen, 2 miles.

CASTLEBAR (Co. Mayo).—*District Asylum.* Med. Sup., Dr. G. W. Hatchell.

CHARTHAM (Near Canterbury).—*Kent County Asylum.* Res. Med. Sup., G. C. FitzGerald, M.D. Access—Chartham Station, 1 mile.

CHEADLE.—*Manchester Royal Lunatic Hospital.* Res. Med. Sup., G. W. Mould, M.R.C.S. Access, Cheadle, 2 miles.

CHESTER.—*Cheshire County Asylum.* Med. Sup., A. Lawrence, M.D.

CHURCH STRETTON.—*Stretton House*, Shropshire, (for gentlemen). Med. Sup., Dr. H. Barnett. Access—Church Stretton Station, 10 minutes' walk.

The Grove House (for ladies). Res. Prop., Mrs. McLintock. Med. Sup., Horatio Barnett, M.A., M.B.

CLONMEL.—*District Asylum.* Med. Sup., Dr. W. H. Garner.

COLCHESTER.—*Eastern Counties Idiot Asylum.* Res. Med. Attend., R. C. Kirkby, M.R.C.S. Eng., L.R.C.P. Lond.; Res. Sup. and Sec., John J. C. Turner. Payment cases received from all parts. Election cases only from Eastern Counties. Access—Colchester, adjoining.

CORK.—*District Asylum.* Accommodation for 1,200 patients Res. Med. Sup., Oscar Woods, M.D. Access—Cork, 1 mile.

Lindville. Med. Prop., Dr. J. Osborne.

CUPAR (Fifeshire).—*Fife and Kinross District Asylum.* Med. Sup., A. R. Turnbull, M.B. Access—Springfield Station.

DARLINGTON (Durham).—*Dinsdale Park.* Res. Med. Sup., J. W. Eastwood, M.D., M.R.C.P., Lond. Access—Darlington, 5 miles; Dinsdale, 1 mile.

DARTFORD.—*City of London Asylum*, Stone. Res. Med. Sup., Dr. E. W. White. Access—South Eastern Railway, Dartford, 1½ miles.

DENBIGH (North Wales).—*North Wales Counties Lunatic Asylum.* Med. Sup., Dr. Llewelyn F. Cox. Access—Denbigh, 1 mile.

DERBY.—*Borough Asylum*, Rowditch. Res. Med. Sup., Dr. Macphail. Access—Great Northern Station, 1 mile; Mid., 2 miles.

County Asylum, Mickleover. Res. Med. Sup., Dr. Lindsay. Access—Derby, 5 miles, Mickleover, 2 miles.

DEVIZES.—*Wilts County Asylum.* Res. Med. Sup., John Ireland Bowes, M.R.C.S. Access—Devizes, 1 mile.

DORCHESTER.—*Dorset County Asylum.* Med. Sup., P. W. MacDonald, M.D. Access—Dorchester, 3 miles.

Further information on page 795.

DOWNPATRICK.—*District Asylum* (for 540 patients). Res. Med. Sup., M. J. Nolan, L.R.C.P., I., and L.M. Access—Downpatrick Station, 1 mile.

DRUMCONDRA (Co. Dublin).—*Hartfield Retreat.* Med. Prop., Dr. Lynch. Vis. Phys., Dr. Matthew Burke Savage. Access—Dublin, 2 miles.

DUBLIN.—*Bloomfield*, Donnybrook Road. Med. Supt., Henry T. Bewley, M.D., F.R.C.P., I.

Farnham House and Maryville, 3 miles from Dublin (for 56 patients, both sexes). Prop. and Res. Med. Sup., A. Patton, M.B. Access—Cab from Dublin.

Highfield (for ladies). *Hampstead* (for gentlemen). Drumcondra. Med. Prop., John Eustace, M.D. Med. Sup., Hy. M. Eustace, B.A., M.D. Access—Amien's St., Dublin. *Further information on page* 790.

House of St. John of God, Stillorgan. Vis. Phys. Dr. T. McEvoy. Access—Stillorgan Station, ½ mile. From Dublin 5 miles.

Richmond District Asylum. Res. Med. Sup., Dr. C. Norman.

Woodbine Lodge, Rathfarnam, 6 miles (ladies). Prop., Mrs. Bishop. Med. Sup., Dr. A. Croly. Access—Rathfarnam Station, 2 miles.

DUDLEY (Stafford).—*Ashwood House*, Kingswinford, Props., Drs. Peacock & Pietersen. Access—Stourbridge Junction, 3 miles, or Dudley Station, 4 miles.

DUMFRIES.—*Crichton Royal Institution.* Med. Sup., James Rutherford, M.D. and F.R.C.P.E., etc. Access—Dumfries, 1 mile.

DUNDEE.—*Royal Asylum*, Westgreen. Res. Med. Sup., James Rorie, M.D. Access—Dundee, 3 miles; Liff, 1½ miles.

DURHAM.—*County Asylum*, near Durham. Res. Med. Sup., Robert Smith, M.D. Access—Sedgefield Station, 3 miles, thence by 'Bus.

EARLSWOOD.—*Asylum for Idiots.* Res. Med. Sup., Dr. Harry Corner. Males 400, females 200. Admission by election or payment of 50 to 200 guineas per annum. Apply to Sec., 36, King William Street, London Bridge, E.C. Access—Earlswood Station, close to the Asylum; Red Hill Junction, 1½ miles. Open for inspection Tuesdays between 11 and 5 o'clock. *Further information on page* 796.

EDINBURGH.—*Mavisbank House*, Polton, Midlothian. Res. Med. Sup., G. R. Wilson, M.B. Access—Polton Station, North British Railway, 5 minutes' walk.

Midlothian and Peebles District Asylum. Res. Med. Sup., R. B. Mitchell, M.D. Access—Rosslynlee Station, 1 mile.

Mollendo House, Musselburgh. Prop. and Res. Med. Sup., A. W. Mackenzie, L.R.C.P.,Ed. Cons. Phys., Thos. R. Scott, M.D. Access—Musselburgh Stat., 10 minutes' walk.

Royal Edinburgh Asylum, Morningside. Res. Phys. Sup., T. S. Clouston, M.D., F.R.C.P., Ed. Access—Edinburgh, 1½ miles.

Saughton Hall. Res. Med. Sup. and Prop., Dr. John Batty Tuke, M.D., F.R.C.P., Ed. Access—Gorgie Station, 15 minutes.

ELGIN.—*District Asylum.* Med. Sup., J. W. N. Mackay, M.D. Access—Elgin, ¼ mile.

ENNIS.—*District Asylum.* Res. Med. Sup., Richard Phillips Gelston, L.R.C.S., I., L.R.C.P., I. Access—Ennis Station, 1¼ miles.

ENNISCORTHY (Co. Wexford).—*District Lunatic Asylum.* Res. Med. Sup., Thomas Drapes, M.B. Access—Enniscorthy, 1 mile.

EPSOM (Surrey).—*Church Street* (for 14 ladies). Res. Med. Sup., Dr. W. Clement Daniel. Access—Epsom Station, 5 minutes' walk.

EXETER.—*City Asylum*, Heavitree. Res. Med. Sup., R. L. Rutherford, M.D. Access—Exeter, L. and S.W.R., 3 miles; G.W.R., 4 miles.

Court Hall, Kenton. Prop., Mr. Mules. Access—Starcross, 1 mile.

Devon County Asylum, Exminster. Med. Sup., G. Symes Saunders, M.D. Access—Exminster Station, 1 mile ; Exeter, 4 miles.

Wonford House (Hospital for the Insane). Res. Med. Sup., P. Maury Deas, M.B., M.S. Lond. Access—Exeter Stat. (Queen St.) 1½ miles ; (St. David's), 2 miles. *Further information on page* 794.

FAIRFORD (Gloucestershire).—*Fairford Retreat.* Res. Med. Prop., Daniel Iles, M.R.C.S. Access—Fairford Station.

GATESHEAD.—*Dunston Lodge Asylum*, Newcastle and Gateshead. Prop., Mr. W. Garbutt. Res. Med. Sup., Dr. Brough. Access—Newcastle-on-Tyne Station, 3 miles.

GLASGOW.—*Baronry Parochial Asylum*, Lenzie. Med. Sup., R. Blair, M.D.

District Asylum. Res. Med. Sup., James H. Skeen, M.B. Access—Bothwell and Fallside Stations, ½ mile.

City Parochial Asylum. Med. Sup., A. Robertson, M.D.

District Asylum and Insane Hospital, Gartlock. Med. Sup., L. Oswald, M.B.

Govan Parochial Asylum, Merryflatts. Med. Sup., W. J. Richard, M.B.

Royal Asylum, Gartnavel, Glasgow. Res. Phys. Sup., D. Yellowlees, M.D., LL.D.

GLOUCESTER.—*Barnwood House.* Res. Med. Sup., J. G. Soutar, M.B., C.M. Access—Gloucester, 2 miles.

Further information on page 794.

Gloucester County Lunatic Asylums, Wotton and Barnwood, Gloucester. Res. Med. Sup., F. Hurst Craddock, M.A. Oxon, M.R.C.S. Access—Gloucester Station, 1 mile.

GOUDHURST (Kent).—*Tattlebury House* (for 6 males and 2 females). Res. Med. Sup., J. S. Newington. Access—Goudhurst, 1 mile.

GREAT YARMOUTH.—*Royal Naval Hospital.* Dr. John Wilson, R.N., Fleet Surgeon in charge. Access—Great Yarmouth Station, ½ mile. For Naval patients only, admitted by Admiralty order.

HADDINGTON.—*District Asylum*, 17 miles from Edinburgh. Med. Sup., J. Bruce-Ronaldson, M.D., F.R.C.S., E., etc. Access—Haddington Station, 10 minutes' walk.

HARPENDEN (Herts.)—*Harpenden Hall*, 4 miles from St. Alban's (for 13 ladies). Prop. and Med. Sup., A. H. Boys, M.R.C.S., L.R.C.P., Ed. Res. Med. Sup., Dr. Fraser. Access—Harpenden Station.

HATTON (near Warwick).—*County Asylum.* Res. Med. Sup., Alfred Miller, M.B. Access—Hatton Station, 2 miles ; Warwick Station, 3 miles. .

HAYWARD'S HEATH.—*East Sussex County Asylum.* Res. Med. Sup., C. E. Saunders, M.D. Access—Hayward's Heath Station, 1½ miles.

HENLEY-IN-ARDEN (Warwickshire).—*Glendossil* (for both sexes). Res. Prop., Dr. S. H. Agar. Access—Great Western Railway.

HEREFORD.—*County and City Asylum.* Med. Sup., T. A. Chapman, M.D. Access—Hereford, 3 miles.

HITCHIN (Herts), near.—*Three Counties Asylum.* Res. Med. Sup., E. Swain, L.R.C.P. Access—Three Counties Station, 1 mile.

HULL.—*Borough Asylum.* Res. Med. Sup., J. Merson, M.D. Access—Willerby Station, 1 mile.

Craven Street Retreat, Sculcoates. Prop., J. Brown. Access—Hull, 1 mile.

INVERNESS.—*District Asylum.* Med. Sup., John Keay, M.D.; Asst. Med. Off., W. C. Hossack. Access—Inverness, 2½ miles.

IPSWICH.—*Borough Asylum.* Med. Sup., Dr. E. L. Rowe. Access—Ipswich, 2 miles.

ISLE OF MAN.—*Lunatic Asylum*, Union Mills. Med. Sup., W. Richardson, M.D. Access—Douglas, 3 miles.

ISLEWORTH (Middlesex).—*Wyke House.* Res. Prop., Dr. F. Murchison. Access—Isleworth, Brentford, Osterley Stat., 1 mile.

IVYBRIDGE (Blackadon).—*Borough Asylum.* Res. Med. Sup., Dr. A. N. Davis. Access—Kingsbridge Road, and Ivybridge 1½ miles.

JERSEY.—*The Grove.* Res. Med. Prop., Francis Neel Gaudin, M.P.C., M.R.C.S. Eng., L.S.A. Lond. 2½ miles from St. Heliers, 2 from St. Aubin's. Access—G.W.R., *via* Weymouth, 4½ hours rail from London, and 5½ hours sea passage; per L. and S.W.R., *via* Southampton, 2 hours rail and 8 hours sea passage.

KILKENNY.—*District Asylum.* Res. Med. Sup., Dr. Wm. Z. Myles.

KILLARNEY.—*District Asylum.* Res. Med. Sup., Dr. L. T. Griffin. Access—Killarney Station, ½ mile.

KINGSLAND (Herefordshire).—*Street Court.* Res. Med. Sup. and Partner, Dr. W. F. Walker. Number of patients limited to 6. Access—Kingsland Station. Leominster, 6 miles.

KINGSTON-ON-THAMES.—*Canbury House.* Prop., W. H. Roots M.R.C.S.

KNOWLE (near Fareham).—*County Asylum.* Med. Sup., T. B. Worthington, M.D.

LANCASTER.—*County Asylum.* Res. Med. Sup., David M. Cassidy, M.D., D.Sc. Access—Lancaster Station.

LEEDS (near Menston). *West Riding Asylum.* Res. Med. Sup., Dr. McDowall. Access—Guiseley Station.

LEICESTER.—*Borough Asylum.* Res. Med. Sup., J. E. M. Finch, M.D. Access—Humberstone G.N.R. ½ mile.

Leicestershire and Rutland Asylum. Res. Med. Sup., R. C. Stewart, M.R.C.S. Access—Leicester town, 1 mile.

LETTERKENNY and LONDONDERRY.—*Donegal District Asylum.* Res. Med. Sup., Edward E. Moore, M.D. Access—Letterkenny and Lough Swilley Railway, ½ mile.

LICHFIELD.—*County Lunatic Asylum*, Burntwood, near Lichfield. Res. Med. Sup., James Beveridge Spence, M.D. Access—Lichfield City Station, 3½ miles; Trent Valley Station, 4½ miles; Hammerwich, 1½ mile.

LIMERICK.—*District Asylum.* Res. Med. Sup., Dr. E. D. O'Neill. Access—Limerick Station, ½ mile.

LINCOLN.—*County Asylum*, Bracebridge. Med. Sup., J. W. Marsh, M.R.C.S. Access—2½ miles from railway station.

The Lawn. Res. Med. Sup., Arthur P. Russell, M.B. Access—Lincoln Station, 1 mile. *Further information on page* 798.

LIVERPOOL.—*Shaftesbury House.* Near Liverpool and Southport. Res. Med. Sup., Stanley A. Gill, B.A., M.D., M.R.C.P., Lond. Access—Formby Station, ¼ mile distant. *Further information on page* 789.

Tue Brook Villa, 3 miles from Liverpool. Res. Med. Sup., Geo. Duffus, M.B. (For 52 males and females.) Access—Tue Brook Stat. *Further information on page* 792.

LONDON.—*Bethlem Royal Hospital*, St. George's Road, London, S.E. Res. Med. Sup., R. Percy Smith, M.D., F.R.C.P. *Further information on page* 793.

Bethnal House, Cambridge Road, N.E. Res. Med. Sup., J. Kennedy Will, M.D. Access—Railway Station near East London Museum.

Brooke House, Upper Clapton. Props., Mr. H. T. Monro and Dr. J. O. Adams; Res. Med. Sup., Dr. J. O. Adams. Access—Clapton.

Camberwell House, S.E. Prop., J. H. Paul, M.D. Res. Med. Sup., Frank Schofield, M.D.

Chiswick House, Chiswick, and 37, Albemarle St., W. Res. Lics., T. Seymour Tuke, M.A., M.B., M.R.C.S., and C. M. Tuke, M.R.C.S. Access—Chiswick Station, ¾ mile; Turnham Green Station, ⅓ mile.

County Asylum, Colney Hatch, N. Med. Sup., W. J. Seward, M.B. Access—New Southgate, G.N.Rly.

Featherstone Hall, Southall. Med. Lic., Miss H. E. Dixon. Res. Med. Sups., Drs. J. F. Blandford and Graves Burton. Access—Southall Station, 5 minutes' walk.

Flower House, Catford, S.E. Res. Med. Sup., C. A. Mercier, M.B. Access—C. and D. Rly., Beckenham Hill, 5 minutes' walk. *Further information on page* 797.

Goudhurst, Stanley Road, Teddington. Res. Med. Sup., Dr. R. A. Clarke.

Grove Hall, Bow (both sexes). Med. Lics., Mr. Byas and Dr. Mickle. Access—Bow Road and Bow Stations, ⅛ mile.

Hallifford House, Sunbury-on-Thames, S.W. Res. Med. Sup., W. J. H. Haslett, M.R.C.S., L.R.C.P. Access—Sunbury Station, 1¼ mile. *Further information on page* 796.

Hayes, Wood End House (ladies). Uxbridge, 3 miles, London, 12 miles. Med. Lic., Dr. H. Stilwell. Access—Hayes Station, 1 mile.

Hayes Park, Hayes, Middlesex, near Uxbridge. Proprietress, Mrs. Benbow. Access—Hayes Station, 2 miles.

Hendon Grove Asylum (for ladies), Hendon, Middlesex. Res. Med. Lic., H. Hicks, M.D. Access—By Mid. Rly., Hendon Station, ½ mile, or 'Bus from Swiss Cottage, St. John's Wood, N.W.

Hoxton House, London, N. Res. Med. Sup., John F. Woods. Access—Shoreditch Station, two minutes' walk; Liverpool Street Station, ten minutes' walk.

London County Asylum, Hanwell, W. Res. Med. Sup., R. R. Alexander, M.D.

Middlesex County Asylum, Banstead, S.E. Res. Med. Sup. T. C. Shaw, M.D. Access—Belmont Station, ½ mile; Sutton Station, 1½ mile.

Middlesex County Asylum, Tooting, S.W. Med. Sup., H. G. Hill, M.R.C.S. Access—Wandsworth Common Station, 1 mile.

Moorcroft House, Hillingdon (males). Uxbridge, 2 miles, London, 13 miles. Med. Licensee, Dr. Stilwell. Access—West Drayton Station, 2 miles.

Newlands House, Tooting, Bec Road, S.W. Prop., Dr. H. Sutherland. Res. Med. Supt., E. T. Hall, M.R.C.S.

Northumberland House, Green Lanes, N. Prop., A. H. Stocker, M.D. Access—Finsbury Park Station.

Otto House, 47, North End Road, Hammersmith, W. Med. Sup., Dr. H. Sutherland. Access—West Kensington Station, ¼ mile.

Peckham House, Peckham, S.E. Prop., Alonzo H. Stocker, M.D. Res. Med. Sup., Harold C. Halsted, M.D. Access—Peckham Rye Station, 10 minutes' walk. *Further information on page 797.*

Peterborough House, Fulham. Res. Med. Sup., Dr. James Robt. Hill. Access—Parsons' Green or Chelsea Station, 5 minutes' walk.

St. Luke's Hospital, Old Street, E.C. Med. Sup., G. Mickley, M.B.

Sutherland House, Surbiton, nr. Kingston-on-Thames (ladies). Res. Med. Sups., Robt. Collum, M.D., M.R.C.P., Lond. Access, Surbiton, ¼ mile.

The Huguenots, East Hill, Wandsworth, S.W. (ladies). Licensee, Mrs. Leech. Med. Off., Dr. G. F. Blandford. Access—Clapham Junction Station, 10 minutes; Wandsworth, 3 minutes.

The Priory, Roehampton, S.W., near Richmond. Res. Med. Sup., James Chambers, M.D. Access—Barnes Station, 8 minutes' walk.

Vine Cottage, Norwood Green, Southall. Prop., Mrs. Oliver. Med. Sup., Dr. H. J. Thornton. Access—Southall Station, 1 mile.

LONDONDERRY.—*District Asylum.* Res. Med. Sup., Dr. Hetherington.

MACCLESFIELD.—*Parkside Asylum.* Res. Med. Sup., T. Steele Sheldon, M.B., Lond. Access—Macclesfield Station, 1 mile.

MAIDSTONE.—*Kent County Asylum.* Res. Med. Sup., F. Pritchard Davies, M.D. Access—Maidstone Station, 1½ miles.

West Malling Place (for ladies). *Castle House* and *Winthies Cottage* (for gentlemen). Res. Med. Sup., Dr. James Adam. Access—Malling Station, 1 mile.

MARKET LAVINGTON (Wilts).—*Fiddington House.* Prop. and Res. Med. Sup., C. Hitchcock, M.D. Access—Devizes Station, 6 miles. *Further information on page* 797.

MARYBOROUGH (Queen's County). *District Asylum.* Med. Sup., Dr. J. H. Hatchell.

MELROSE, N.B.—*Roxburgh District Asylum.* Res. Med. Sup., J. C. Johnstone, M.D. Access—Melrose, 1 mile.

MELTON.—*Suffolk County Asylum*, Melton, near Woodbridge. Res. Phys. and Sup., Wilson Eager, L.R.C.P. Access—Melton Station, 1¼ mile; Woodbridge Station, 2¼ miles.

MONAGHAN (Ireland).—*District Asylum*, Res. Med. Sup., Dr Edward Taylor. Access—Monaghan, ¼ mile.

MONTROSE, N.B.—*Montrose Royal Lunatic Asylum.* Phys. Sup., J. C. Howden, M.D. Access—Hillside Station, ¼ mile; Dubton Station, 1 mile.

MORPETH.—*Northumberland County Asylum.* Res. Med. Sup. Thos. W. McDowall, M.D. Access—Morpeth Station, 1 mile, by 'Bus.

MULLINGAR.—*District Asylum.* Res. Med. Sup., Dr. A. D. O'C. Finegan. Access—Mullingar Station, 1 mile.

NELSON (Lanc.).—*Marsden Hall* (for both sexes). Res. Prop., Mrs. Bennett; Med. Sup., Dr. A. P. Millar. Access—Nelson or Colne Stations, 1½ miles.

NEWCASTLE-ON-TYNE.—*City County Asylum*, Gosforth. Res. Med. Sup., Jas. Thomas Callcott, M.D. Access—Newcastle, 1 mile.

NEWTON-LE-WILLOWS.—*Haydock Lodge Asylum.* Med. Prop., E. H. Beaman, M.R.C.S., Ed.; Res. Med. Sup., Dr. C. T. Street. Access—Newton-le-Willows Station, 2 miles.

Further information on page 795.

NORTHAMPTON.—*Berrywood Asylum.* Res. Med. Sup., R. Greene, F.R.C.P., Ed. Access—Castle Station, 2 miles: Midland Station, 2½ miles.

St. Andrew's Hospital. Med. Sup., J. Bayley, M.R.C.S.

NORWICH.—*Heigham Hall.* Licensees, Mrs. Watson and Mr. Alfred Mottram. Res. Med. Sup., Thos. J. Compton, M.D. Access—Norwich Station, ¼ mile.

Norfolk County Asylum, Thorpe. 800 Beds. Res. Med. Sup., David G. Thomson, M.D. Access—Norwich (Thorpe) Station, ½ mile.

Norwich City Asylum, Hellesdon. Res. Phys. and Sup., Dr. Wm. Harris, F.R.C.S.; Hon. Con. Phys., Sir Frederic Bateman, F.R.C.P.; Res. Asst. Med. Officer, Dr. A. Sykes. Acc.—Thorpe, cab fare 4/-; Victoria Station, cab fare 3/6; City Station, fare 3/-; Hellesdon Station, 1 mile.

The Bethel Hospital for the Insane. Res. Med. Sup., J. Fielding, M.D.; Con. Phys., Sir Frederic Bateman, F.R.C.P. Access—Thorpe Station, 1 mile.

NOTTINGHAM.—*Borough Asylum*, Mapperley Hill. Med. Sup., E. Powell, M.R.C.S.

Notts County Asylum, Snenton. Res. Med. Sup., Dr. A. Aplin. Access—Mid. and Gt. North. Station, about 15 minutes' walk.

The Coppice. Res. Med. Sup., W. B. Tate, M.D. Access—Mid. and Gt. North. Station, 2½ miles.

OMAGH.—*District Asylum.* Res. Med. Sup., Geo. E. Carre, M.B. Access—Omagh Station, 2 miles.

OXFORD.—*Oxford County Asylum.* Res. Med. Sup., R. H. H. Sankey, M.R.C.S. Access—Littlemore Station, G.W.R.

Warneford Asylum, Oxford 1½ mile (for private patients only), Res. Med. Sup., J. Bywater Ward, M.D. Access—Oxford Station, 2¼ miles. *Further information on page* 793.

PERTH.—*District Asylum*, Murthly. Med. Sup., Geo. M. Robertson, M.B., F.R.C.P., Edin.

James Murray's Royal Asylum (for private patients only), Perth. Access—Perth, under 2 miles.

PLYMOUTH.—*Plympton House*, Plympton, S. Devon. Res. Med. Sup., Charles Aldridge, M.D. Access—Plympton, 1 mile; Mills 2 miles. *Further information on page* 795.

PORTSMOUTH.—*Borough Asylum*, Res. Med. Sup., W. C. Bland, M.R.C.S. Access—Fratton Station, 2 miles.

PRESTWICH (near Manchester).—*County Asylum.* Res. Med. Sup., Henry R. Ley, M.R.C.S.

RAINHILL (near Liverpool).—*County Asylum.* Res. Med. Sup., J. Wiglesworth, M.D. Access—St. Helen's, 2½ miles; Rainhill Station, 1 mile.

ROTHERHAM (Yorkshire).—*The Grange*, near Rotherham, 5 miles from Sheffield (for ladies). Res. Med. Prop., C. Clapham, M.D. Access—Grange Lane Station, ¼ mile.

SALISBURY.—*Fisherton House Asylum.* Med. Sup., William Corbin Finch, M.D. Access—Salisbury Stat., 5 minutes' walk.

Laverstock House. Prop., J. Haynes; Med. Sup., Hy. J. Manning, M.R.C.S.

SHREWSBURY.—*Salop and Montgomery Counties Lunatic Asylum.* Res. Med. Sup., Arthur Strange, M.D. Access—Shrewsbury Station, 2½ miles.

SLIGO.—*District Asylum.* Res. Med. Sup., Dr. Joseph Petit. Access—Midland, Great Western and Sligo, Leitrim and Northern Counties Railways, Sligo Station, 1½ miles.

STAFFORD.—*County Lunatic Asylum.* Res. Med. Sup., Dr. J. W. Stirling Christie. Access—Stafford Station, about 1 mile.

Institution for the Insane, Coton Hill. Med. Sup., Dr. R. W. Hewson.

STARCROSS (near Exeter).—*Western Counties Idiot Asylum* Res. Sup., Wm. Locke. Access—Starcross Station, 5 minutes' walk.

STIRLING.—*District Asylum.* Med. Sup., Dr. J. MacPherson.

ST. LEONARDS-ON-SEA.—*Ashbrook Hall,* Hollington (for ladies) Res. Prop., Mrs. Letitia A. Hitch. Access—Station, Warrior Square St. Leonards-on-Sea, half-an-hour's walk.

STONE (near Aylesbury).—*Bucks County Asylum.* Res. Med. Sup., J. Humphry, M.R.C.S. Access—Stone, 3 miles from Aylesbury.

SUTTON (Surrey).—*Chalk Pit House.* Prop., F. D. Atkins, M.R.C.S.

TAMWORTH (Staffs.).—*The Moat House* (for ladies). Res. Prop., E. Hollins, M.A. Med. Attendants, J. Holmes Joy, M.D., and S. H. Harrison, L.R.C.P., Lond.

TICEHURST (Sussex).—*Asylum.* Props., H. F. H. Newington, M.R.C.P., and A. S. L. Newington, M.B.

TONBRIDGE.—*Redlands.* Res. Phys., W. M. Harmer, F.R.C.P. Access—Tonbridge Station, 2½ miles.

VIRGINIA WATER.—*Holloway Sanatorium, Hospital for the Insane.* St. Ann's Heath, Virginia Water. Res. Med. Sup., Sutherland Rees Philipps, M.D. Asst. Med. Officers, W. D. Moore, M.D., R. L. S. Nuthall, L.R.C.P., Emily L. Dove, M.B., T. Harper, L.R.C.P. Chaplain, Rev. I. Peck, M.A. Treas., John Ashby, Esq., Staines. Access—Virginia Water Station, 5 minutes' walk. Seaside Branch, Hove Villa, Dyke Road, Brighton. Med. Off., E. Noble Edwards, M.R.C.S.

WADSLEY (near Sheffield).—*South Yorkshire Asylum.* Res. Med. Sup., W. S. Kay, M.D. Access—Wadley Bridge, 2 miles.

WAKEFIELD.—*West Riding Asylum.* Res. Med. Sup. and Director, W. Bevan Lewis, L.R.C.P., Lond. Access—Kirkgate and Westgate Stat., 1 mile.

WALLINGFORD (Berks).—*Berks County Asylum.* Res. Med. Sup., J. W. A. Murdoch, M.B. Access—Cholsey, 1 mile.

WARWICK.—*Midland Counties Idiot Asylum.* Knowle. Res. Sup. and Sec., W. G. Blatch; Med. Officer, R. H. Foster, M.R.C.S. Access—Knowle Station, ½ mile.

WATERFORD.—*District Asylum* Res. Med. Sup., Dr. R. Atkins. Access—Waterford and Kilkenny Railway Station, about 2 miles.

St. Patrick's Institution, Belmont Park. Sup., Br. W. J. Becker. Med. Sup., Dr. W. R. Connolly.

WELLS.—*Somerset and Bath Asylum,* Wells, Somerset. Res. Med. Sup., A. Law Wade, M.D. Access—Wells, 2 miles; Masbury, 2½ miles.

WHITCHURCH (Salop).—*St. Mary's House* (ladies only). Res. Med. Sups., S. T. Gwynn, M.D., and C. H. Gwynn, M.D. Access—Whitchurch Station, 1½ miles.

WHITEFIELD (near Manchester).—*Overdale.* Res. Med. Sup., James Holmes, M.D. Access—Prestwich and Whitefield Stations, 1½ miles each; Molyneux Brow, ¼ mile.

WHITTINGHAM (near Preston).—*County Asylum.* Res. Med. Sup., Dr. Frank Perceval. Access—Grimsargh Station, 1¾ miles; Whittingham Station, 3 minutes.

WINCHELSEA (Sussex).—*Periteau House*, near Hastings (ladies only), Proprietress, Mrs. R. V. Skinner. Res. Med. Sup., E. W. Skinner, M.D. Access—Winchelsea Station, 1 mile.

WOKING.—*Surrey County Asylum*, Brookwood. Res. Med. Sup., Dr. J. E. Barton. Access—Brookwood Station, 1¼ miles.

WORCESTER.—*County and City Lunatic Asylum*, Powick. Res. Med. Sup., E. Marriott Cooke, M.B. Access—Worcester, 4½ miles.

YORK.—*Lawrence House* (for 8 males and 14 females). Prop. and Med. Sup., G. I. Swanson, M.D. Access—York.

North Riding of Yorkshire Asylum. Res. Med. Sup., J. Tregelles Hingston. Access—York, 2 miles.

The Friends' Retreat. Res. Med. Sup., Bedford Pierce, M.D., M.R.C.P., Lond. Access—York Station, 1 mile.

York Lunatic Asylum, Bootham. Res. Med. Sup., C. K. Hitchcock, M.D., M.A., Cantab. Access—York, 1 mile.

TRAINING INSTITUTIONS.

CHILCOMPTON (near Bath).—*Downside Lodge.* Med. Sup., Alex. Waugh, M.D. Access—Chilcompton Station, about ¼ mile.

Further information on page 802.

DUNDEE.—*Baldovan Asylum.* For the Training and Education of Imbecile Children. Matron, Miss Butter. Vis. Phys., Dr. Greig. Access—Baldovan, 1 mile.

KINGSTON-ON-THAMES (Surrey).—*Conifers*, for the education and care of girls needing special oversight under medical guidance. Med. Sup., Dr. Langdon Down. Access—Hampton Wick Station, 8 minutes' walk.

Normansfield Training Institution (for backward and feeble-minded children). Med. Sup., Dr. Langdon Down. For male and female patients of the upper class. Access—Hampton Wick, 5 minutes' walk.

Trematon, for the education of boys unsuited for an ordinary school. Med. Sup., Dr. Langdon Down. Access—Hampton Wick, 5 minutes'.

Winchester House, Kingston Hill. Training Institution for backward and feeble-minded children. Res. Med. Supt., Dr. Fletcher Beach. Access—Norbiton Station, Sth. West. Rail., 15 minutes' walk.

Further information on page 800.

LANCASTER.—*Royal Albert Asylum* (for idiots and imbeciles of the Northern counties. For 600 patients). Principal and Sec., James Diggens. Res. Med. Sup., Telford Smith, M.A., M.D. Admission by election, or at various rates of payment. Access—Lancaster, 1 mile.

Brunton House, a Home for special Private Pupils under training at the Royal Albert Asylum. Private Pupils received from all parts of the country. Principal and Sec., James Diggens. Access as above.

LONDON (Upper Norwood).—*Grosvenor*, 84, Auckland Road Prop., Miss Arkell.

Further information on page 797

MAIDSTONE (Kent).—*Bearsted House.* School and Home for the Feeble-minded. Res. Sup. and Prop., G. T. A'Vard. Access—Bearsted Station (Chatham and Dover Railway), 5 minutes' walk.

Further information on page 799.

RICHMOND (Surrey).—*Ancaster House.* Richmond Hill. For mentally-feeble children (*not* idiots). Res. Med. Sup., G. E. Shuttleworth, B.A., M.D. Acc.—Richmond Stat., L. & S.W.R., Metropolitan, District and North London Railway, 1 mile.

Further information on page 801.

Homes for Inebriates.

Homes marked thus (*) are licensed under the Inebriates Act.

The patient must sign a Form expressing a wish to enter the retreat, before two magistrates. This can be done at the private residence of the patient, or at the retreat. Two friends must also sign a declaration that they consider the patient an "Inebriate" within the meaning of the Acts.

BRISTOL.—*Dunmurry*, Sneyd Park, near Clifton. Res. Med. Prop., Dr. James Stewart, B.A., F.R.C.P. Ed., and Mrs. Stewart. Access—Bristol or Clifton Down Station, 1¼ mile from the latter.

Further information on page 798

Kingswood Park. Res. Med. Sup., Dr. R. W. Brimacombe. Access—Mangotsfield 2 miles; Bristol 4 miles; Bath 8 miles.

CROYDON.—*St. Raphael's*, Woodside. Apply Rev. A. Tooth. Access—Woodside Station, Croydon.

EARL'S COLNE (Essex).—*Buxton House* (for ladies). Prop., Miss Pudney; Med. Attendant, J. Taylor, M.R.C.S. Access—Colne, 2 miles; Chappel, 3 miles.

FOLKESTONE.—**Capel Lodge* (Near Folkestone.) Res. Prop., E. Norton, M.D. Access—Folkestone Junction, 2 miles.

LEICESTER.—*Melbourne House* (for ladies). Prop., Mr. H. M. Riley. Med. Attendant, C. J. Bond, F.R.C.S.

Tower House (for ladies). Prop., Mrs. Theobald. Med. Attendant, Dr. Clarke. Access—Leicester Station, 1½ miles.

MANCHESTER (near).—*The Grove*, Fallowfield.

MIDDLESEX.—**High Shot House*, Twickenham. Res. Med. Sup., F. H. Bromhead, B.A., M.B. Camb., M.R.C.S. Eng., L.R.C.P. Lond. Access—St. Margaret's Station from Waterloo, 300 yards.

Further information on page 798

RICKMANSWORTH (Herts).—**Dalrymple Home* (for 20 male patients). Res. Med. Sup., R. Welsh Branthwaite, L.R.C.P. Access—Rickmansworth Station, Metropolitan Rly., ½ mile; L. & N.W. Rly., 1 mile.

Further information on page 794.

STONEHAVEN (N.B.).—*Elsick House.* Prop., D. Forbes.

SYDENHAM.—*Women's Temperance Home.* Hon. Sec., Miss Bagster. Med. Sup., Dr. Gardner. Access—Sydenham, 3 minutes.

WALSALL.—**Old Park Hall Retreat.* Birmingham, 6 miles. Res. Med. Sup., Fredk. John Gray. Access—Walsall Station, 1¾ mile.

WESTGATE-ON-SEA.—**Tower House Retreat* (for ladies and gentlemen). Principal and Licensee, A. F. Street, M.A., M.D. Access—5 minutes' walk from Westgate-on-Sea Station.

Hydropathic Establishments of Great Britain.

We wish to make this list complete, but it is impossible when some Proprietors do not return out letter of enquiry which is *stamped for reply*. This will account for some omissions in the present edition.

ABERDEEN.—*Deeside Hydropathic Establishment*, Heathcot, near Aberdeen.—Res. Med. Sup., Alexander Stewart, M.D., LL.D., F.S.Sc. Access—Rail to Aberdeen, thence by cab or omnibus. Hydropathic conveyance meets any train when sent for, distance 5 miles.

Further information on page 805.

BASLOW (near Chesterfield). *Baslow Hydropathic Establishment*, near Chatsworth Park, Derbyshire. Res. Med. Sup., E. M. Wrench, F.R.C.S. Access—Rowsley Station, 4½ miles by omnibus.

BATH.—*West of England Hydropathic Establishment*, Limpley Stoke, near Bath. Res. Phys., C. J. Whitby, M.D. Access—Limpley Stoke Station.

BEN RHYDDING.—*Ben Rhydding.* Near Leeds, Bradford, or Harrogate. Phys., Thos. Johnstone, M.D., M.R.C.P. Access—Ben Rhydding Station, a few hundred yards.

BISHOPS-TEIGNTON (near Teignmouth).—*The South Devon Health Resort.* Prop., C. F. Carpenter. Med. Sup., F. Cecil H. Piggott, M.D. Access—Teignmouth Station, 2½ miles.

BORTH (Cardiganshire).—*Hydropathic Establishment.* Med. Sup., J. Harden Jones, M.R.C.S.

BOURNEMOUTH (Hampshire).—*Bournemouth Hydropathic Establishment.* Res. Prop., Dr. Watson. Access—Bournemouth, East Station, 1½ mile; West Station, ½ mile.

Southcliffe. Res. Prop., E. P. Philpots, M.D.

Further information on page 805.

BRIDGE OF ALLAN.—*Bridge of Allan Hydropathic Co.* Manager, J. M'Kay. Access—Bridge of Allan Station, ½ mile.

BRISTOL.—*The Bristol Hydropathic Establishment* (formerly Bartholomew's Turkish Baths), College Green. Res. Phys., W. J. Spoor, M.B., M.R.C.S.

BUTE.—*Kyles of Bute Hydropathic*, Port Bannantyne, Buteshire. Man., A. Menzies; Med. Sup., Dr. A. J. Hall. Access—Clyde Steamers call daily.

BUXTON.—*Buxton House Hydropathic*, adjoins "The Peak Hydro." Cons. Phys., S. Hyde, M.D. Distance from Station, 4 minutes.

Buxton Hydropathic and Winter Residence. Prop., Mr. H. Lomas. Access—Buxton Station, 4 minutes' walk.

COLWYN BAY (North Wales).—*Colwyn Bay Hydropathic and Winter Residence.* Med. Sup., Dr. W. M. V. Williams. Access—Colwyn Bay Station, 7 minutes' walk.

CORK.—*St. Ann's Hill Hydropathic.* Res. Phys., M. Altdorfer, M.D. Access—Blarney Station, 2½ miles distant; Muskerry Light Railway from Cork, Station on grounds.

Further information on page 802.

CRIEFF.—*Strathearn House* (17 miles from Perth). Res. Med. Sups., Thos. H. Meikle, M.D., J.P., and T. Gordon Meikle, M.B., C.M. Access—Crieff Station, 1 mile.

DUNBLANE.—*Dunblane Hydropathic*, Perthshire. Res. Phys. Access—Dunblane Station. *Further information on page* 804.

EDINBURGH.—*Hydropathic.* James Bell, Man. Director. Access—Merchiston Station, 1 mile; Waverley Station, 3 miles.

FOLKESTONE.—*Bathing Establishment Co., Limited.* Access—Shorncliff, Folkestone Central, and Junction Stations.

FORRES.—*Cluny Hill Hydropathic.* Access—Forres Station, 1 mile; Inverness, 24 miles.

GRANGE-OVER-SANDS.—*Hazelwood Hydropathic.* Con. Phys. Dr. Lowther. Access—Carnforth, London and North Western Railway, and thence by Furness Railway. Grange-over-Sands, ¼ mile.

HARROGATE (Yorkshire).—*Harlow Manor Hydro.* Mr. Ballardir, Manager; Med. Sup., Dr. Dimmock.

The Cairn Hydropathic. Mr. Alderson, Manager.

The Harrogate Hydropathic Establishment. Phys., Geo. Tennant, M.B. Access—Harrogate, ½ mile.

HASTINGS (St. Leonard's).—*The Hastings Hydropathic and Spa.* Access—Hastings Station, 1 mile.

HEXHAM (Northumberland).—*Tynedale Hydropathic.* Prop., F. G. Grant; Med. Sups., Thos. Stainthorpe, M.D. and Dr. Stewart, Access—Hexham; Newcastle, 19 miles.

ILKLEY (Yorkshire).—*Craiglands Hydropathic.* Props., Dobson Bros. Med. Sup., Henry Dobson, M.D., C.M.

Ilkley Wells House Hydropathic. Med. Sup., Thos. Scott, M.D. Access—Ilkley Station, ¼ mile.

The Spa Hydropathic. (Near Leeds and Bradford.) Med. Sup. Thos. Johnstone, M.D., M.R.C.P. Access—Ilkley, Yorks, Mid., Gt. Northern and Nth. Eastern Rys., and 3 minutes from Ilkley.

Further information on page 806.

Troutbeck Hydropathic Establishment and Sanatorium. Props., Dobson Bros. Med. Sup., Thos. Scott, M.D.

KILMALCOLM (Renfrewshire).—*Hydropathic Establishment.* Manageress, Miss G. Thomson. Access—Greenock, 7 miles, thence by steamer. Kilmalcolm, 1 mile.

LLANDUDNO.—*Hydropathic and Winter Residence.* Med. Sup., James Craig, M.B. Access—Llandudno Station, 5 minutes.

MALVERN.—*The Malvern Hydropathic Establishment* (late *Dr. Rayner's*). Res. Prop., J. C. Fergusson, M.D., Access—Great Malvern Station, ½ mile. *Further information on page* 806.

Wyche-side Hydropathic. Res. Phys., Dr. Grindrod. Access—Malvern Wells G. W. Station, ½ mile.

MATLOCK.—*Darley Dale Hydropathic.* Prop., Wm. Atkin; Med. Sup., Dr. W. Moxon. Access—Matlock Bridge Station, 1¾ mile; Darley Dale, ½ mile.

Elm Tree House. Prop., Wm. Bramald. Med. Sup., Dr. Sharpe, Access—Matlock Bridge Station, ½ mile.

Matlock House Hydropathic, Matlock Bank, Matlock Bridge. Med. Sup., Dr. Moxon. Prop., Mrs. J. L. Dean. Access—Near Matlock Bridge Station.

Smedley's Hydropathic Establishment, Matlock Bridge. Phys., W. C. Sharpe, M.B., with a House Phys. Access—Matlock Bridge Station, ½ mile; Omnibus. *Further information on page* 803.

MELROSE.—*Waverley Hydropathic.* Con. Phys., Dr. Wade. Access—Melrose Station, 1 mile.

MOFFAT.—*The Moffat Hydropathic.* Prop., J. Farquharson.

PEEBLES.—*Peebles Hydropathic.* Access—Peebles Station, 1 mile.

PITLOCHRY.—*Atholl Hydropathic.* Prop., W. Macdonald. Access—Pitlochry Station, 1 mile.

RHYL.—*North Wales Hydropathic.* Med. Sup., Dr. R. Moreton Pritchard. Access—Rhyl Station, 5 minutes walk.

ROTHESAY.—*Glenburn Hydropathic.* Res. Phys., Dr. Philp. *Further information on page* 806.

SCARBOROUGH—*Hydropathic Establishment*, West Bank. Prop., R. B. D. Wells. Med. Attendant, Dr. Megginson. *Further information on page* 805.

SHANDON.—*Shandon Hydropathic.* Med. Sup., Surg.-Major R. D. Reid, M.D. Access—Nor. Brit. Railway & Steamer to Shandon Pier.

SOUTHPORT.—"*Sunnyside*" *Hydropathic.* Prop., J. Boocock. Phys., Dr. F. A. Ernest Barnardo. Access—Southport Stations, ½ mile. *Further information on page* 804.

The Southport Limes Hydropathic (51, Bath Street). Phys. and Surg., Dr. A. B. Kenworthy. Access—Chapel Street, Lord Street or Central Stations ¼ mile.

TUNBRIDGE WELLS.—*The Spa.* Phys., Dr. G. L. Pardington. Access—Tunbridge Wells Station, about ½ mile.

ULVERSTON AND BARROW-IN-FURNESS.—*Conishead Priory Hydropathic.* Res. Med. Sup., C. E. Stechan, M.B. Access—Carnforth or Hellifield Stations.

WATFORD.—*The Hall*, Bushey. Res. Phys., R. J. Banning, M.D., J.P. Access—Bushey Station, 1 mile.

WEMYSS BAY.—*Wemyss Bay Hydropathic.* Med. Sup., Ronald Currie, M.D., C.M. Access—Wemyss Bay Station, *via* Glasgow, ½ mile.

WINDERMERE.—*Windermere Hydropathic*, 9 miles from Kendal. Access—Windermere Station (L. & N. W. R.) about 1 mile. Furness Rly. (Bowness Landing), ¼ mile. Pier on the Lake, about 300 yards.

Private Homes for Invalids.

BOURNEMOUTH.—*Overton Hall*, West Cliff. Res. Prop., Dr. A. H. Watson.

JEDBURGH.—*Abbey Green.* Res. Prop., Wm. Blair, M.D. Access—N. B. Rly., Jedburgh. *Further information on page* 792.

LLANDUDNO.—*Ormesidе.* Access—Llandudno Station, ¾ mile.

Books of the Year.

A List of the Principal Medical Works and New Editions Published during 1895.

AMBULANCE AND NURSING.

Ambulance Lectures: to which is added a Nursing Lecture. By J. M. H. Martin. 4th ed. Cr. 8vo, pp. 158. *Churchill* . . . 2/-

Ambulance Work: Lectures on. By R. L. Roberts. 5th ed. With Illusts. Cr. 8vo, pp. 220. *Lewis* 2/6

Hand-Rearing of Infants: An Introductory Manual. By John B. Hellier. With Illusts. Cr. 8vo, pp. 114. *Griffin* 3/-

Helps in Sickness and to Health. Where to Go and What to Do. A Guide to Home Nursing, with a chapter on Pleasure and Health Resorts. By Henry C. Burdett. Cr. 8vo, 400 pp. Illust. *Scientific Press* 5/-

How to Become a Nurse: And How to Succeed. A Complete Guide to the Nursing Profession. By Honnor Morton. 3rd ed., revised. 8vo, 200 pp. Illust. and Copyright Portraits, &c. *Scientific Press* . 2/6

Medical Nursing: Notes on. By J. Anderson. Edited by Ethel F. Lamport. 2nd ed. Cr. 8vo, pp. 184. *Lewis* 2/6

Nurse's Dictionary of Medical Terms and Nursing Treatment. Compiled for the Use of Nurses, by Honnor Morton. 3rd ed., revised. Demy 16mo, 160 pp. *Scientific Press* . . *Net, Cloth* 2/-; *Leather, price* 2/6

Nursing: Its Theory and Practice. Being a complete Text-book of Medical, Surgical and Monthly Nursing. By Percy G. Lewis. 8th ed. Enlarged and Revised throughout. Cr. 8vo, pp. 396. *Scientific Press* 3/6

Nursing: Its Theory and Practice. Being a complete Text-book of Medical, Surgical and Monthly. By Percy G. Lewis. 8th ed., revised, with entirely New Chapters on Monthly Nursing and Confinements. 100 Illusts. Cr. 8vo. *Scientific Press* 3/6

Obstetric Nursing: Manual of. By Marian Humfrey. Vol. 2. Cr. 8vo, pp. 210. *Low* 3/6

Practical Ambulance Tablets. By S. Partridge. 4th ed. 16mo, pp. 70. *Churchill* 1/-

ANATOMY AND PHYSIOLOGY.

Aids to Surgical Anatomy. By E. S. Yonge. 12mo, pp. 146. *Baillière* 2/6

Anatomy: A Manual for Students and Practitioners. By F. J. Brockway and A. O'Malley. Edited by Bern B. Gallaudet. (Student's Essentials). 2nd ed. With Full-page Plates. Cr. 8vo, pp. 370. *Kimpton* *Net* 6/-

Anatomy: Elements of (Quain's). Edited by E. A. Schafer and G. D. Thane. 3 vols. Vol 3, Part 2: The Nerves. By Professor Thane. Illust. by 102 Engravings. 10th ed. Roy. 8vo, pp. 180. *Longmans* 9/-

Anatomy: Tablets of. Dissectional and Scientific. By T. Cooke. New ed. 4to, pp. 326. *Longmans* 10/6

Anatomy and Physiology for Nurses: Text-Book of. By Diana Clifford Kimber. Cr. 8vo, pp. 294. *Macmillan* . . . . *Net* 10/-

Anatomy and Physiology: Outlines of General. The Cell. By Dr. Oscar Hertwig. Trans. by M. Campbell and Edited by H. J. Campbell. With 168 Illusts. 8vo, pp. 384. *Swan Sonnenschein* . . . 12/-

Anatomy of the Human Head and Neck: The. Graphically Illustrated by means of Superimposed Plates. With Descriptive Text by Dr. Schmidt. English ed., by W. S. Furneaux. 4to, sd., pp. 16. *Philip & Son* . . . . . *Net* 2/9

Anatomy of the Nasal Cavity. By A. Onodi. Roy. 8vo. *Lewis Net* 6/-

Dissections Illustrated. By C. G. Brodie. 73 Coloured Plates (5 Full Size, the rest two-thirds Natural Size) and 37 Diagrams. Imp. 8vo, pp. vi—142. *Whittaker & Co.* 42/-

Human Physiology: Elements of. By E. H. Starling. 2nd ed. Cr. 8vo, pp. 454. *Churchill* 7/6

Human Physiology: Manual of. By J. H. Raymond. Prepared with Special Reference to Students of Medicine. With 102 Illusts. in Text, and 4 full-page Coloured Plates. Cr. 8vo, pp. 360. *Kimpton Net* 6/-

Physics: Manual of. For University and Medical Students. By W. Peddie. New ed. *Baillière* 7/6

Physiology: Manual of. By G. N. Stewart. With Practical Exercises and with numerous Illusts., including 5 Coloured Plates. 8vo, pp. 796. *Baillière* 15/-

Physiology: Text-Book of. By M. Foster. Illusts. 6th ed. Part 2, comprising Book 2, The Tissues of Chemical Action with their Respective Mechanisms: Nutrition. 8vo, pp. 524. *Macmillan* . 10/6

Practical Physiology: Outlines of. Including Chemical and Experimental Physiology with Reference to Practical Medicine. By W. Stirling. 3rd ed., Enlarged. With 289 Illusts. Cr. 8vo, pp. 418. *Griffin* 12/6

Mental Physiology: Especially in its Relations to Mental Disorders. By T. B. Hyslop. 8vo, pp. 568. *Churchill* 18/-

Morbid Anatomy: Manual of Practical. A Handbook for the Post-Mortem Room. By H. D. Rolleston and A. A. Kanthack. Cr. 8vo, pp. 254. *Cambridge Warehouse* 6/-

CHEMISTRY.

Analysis of Foods and Drugs: Aids to. By T. H. Pearman and C. G. Moor. *Baillière* 3/6

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Sumner, R. & Co. 50A, Lord Street, Liverpool
Symes & Co. (Lim.), Liverpool
Thompson, Henry A. & Son, 22, Worship Street, E.C.
Warrick Bros., 18, Old Swan Lane, E.C.
Willows, Francis & Butler, 101, High Holborn, W.C.
Wilson, Salamon & Co. (Lim.), 165, Queen Victoria Street, E.C. (Fahlberg's Saccharin)
Woolley, Jas. Sons & Co. Manchester
Wright, Layman & Umney, Southwark, S.E.
Wyleys (Lim.), Coventry
Wyman & Westwood, 58 & 59, Bunhill Row, E.C.

Medical Transfer Agencies.

British Medical Protection Society, 8, Berners Street, W.
Logan, J., 95, Bath St., Glasgow
Orridge & Co., 32, Ludgate Hill, E.C.
Thomas, C. B. C., Devonport
Turner, Percival, 4 Adam Street, Adelphi, W.C.

Nursing Institutions and Associations.

London.

Blackheath Nursing Institution, 9, Montpelier Row, S.E.
Charing Cross Hospital, Strand
Chelsea and Pimlico District Nursing Association, 22, Tite St., Chelsea
Deaconesses Institution, 28, Bow Road, E.
East London Nursing Society, 49, Philpot Street, Commercial Road, East
General Lying-in Hospital, supplies Monthly and Wet Nurses, York Road, Lambeth
General Nursing Institute, 5, Mandeville Place, Manchester Sq., W.
Guy's Hospital Trained Nurses' Institution, 14, St. Thomas Street, S.E.
Hamilton Association for Trained Male Nurses, 57, Park Street, Grosvenor Square, W.
Hanover Institute, 22, George Street, Hanover Square, W.
Highbury Nurses' Institution, 20, St. Mary's Road, Canonbury
Hollond Nursing Institution, Tavistock Chambers, Hart St. E.C.
Holy Cross Society of Trained Nurses, 38, Ladbroke Road, W.
Hooper, Miss, Nurses' Agency, 9, Upper Baker Street, N.W.
Ings House Nurses Co-operation, 81, New Bond Street, W.
Institution for Nurses for Nervous and Mental Disorders, 1, Northcp Street, Grosvenor Square, W.
Kensington District Nursing Association, 1, Bedford Gardens, W.
London Association of Nurses, 123, New Bond St., W.—Branch Offices, 86, Kennington Park Road, S.E.
London Hospital Private Nursing Institution, Whitechapel Road
Metropolitan and National Nursing Association for the Poor, 23, Bloomsbury Square, W.C.
Middlesex Hospital Institute, 17, Cleveland Street, W.
Mildmay Nursing Home, 9 & 10, Newington Green, N.
Nightingale Fund for Training Nurses at St. Thomas' Hospital, Sec., 5, Hyde Park Square, W.
North London Nursing Institute, 8, Alexandra Road, Finsbury Park
North London Nursing Association for the Poor, 413, Holloway Road, N.
Nursing Institute, 39 & 41, Boundary Road, N.W.

Nursing Sisters' Institution, 4, Devonshire Square, Bishopsgate
Nursing Sisters of the Poor, 14, Wellington Road, E.
Paddington and Marylebone District Nursing Association for the Poor, 510, Edgeware Road, W.
Queen Victoria Jubilee Institute for Nurses, for the Poor, St. Katherine's Royal Hospital, Regents Park, N.W.
Royal British Nurses' Association, 17, Old Cavendish Street, W.
Royal Free Hospital Trained Nurses' Institute, Gray's Inn Road, W.C.
St. Bartholomew's Hospital Nurses' Institute, 13, West Smithfield
St. Helena Home, 1 Grove End Road, St. John's Wood, N.W.
St. John Ambulance Association, St. John's Gate, Clerkenwell
St. John the Divine Nursing Sisterhood, 21, Drayton Gardens, S.W.
St. John's House and Sisterhood, 8, Norfolk Street, Strand, W.C.
Westminster Training School, 27, Queen Anne's Gate, S.W.
Wigmore Institution, 2, Bulstrode Street, Welbeck Street, W.
Wilson, D. E., 96—98A, Wimpole Street, W.

PROVINCIAL.

Bangor.
Nursing Institute.

Bath.
Hospital Nursing Institute, 1, Duke Street

Bournemouth.
Nurses' Institute

Bradford.
Nurses' Institute, Manningham Lane

Brighton.
Rawlinson Institution, 113, King's Road
West End Nursing Institution, 1, York Road

Bristol.
Royal Infirmary
General Hospital
Nurses' Training Institution, Clifton

Cambridge.
Nursing Association, 13, Fitzwilliam Street

Cardiff.
Glamorganshire and Monmouthshire Trained Nurses' Institution

Dublin.
City of Dublin Nursing Institution, 27, Upper Baggot Street
Red Cross Nursing Sisters' House, 87, Harcourt Street

Eastbourne.
Nursing Institution, 27, Hyde Gardens

Edinburgh.
Training Institution, 13, Stafford Street

Glasgow.
Public Dispensary, 54, Dundas St.
Glasgow Maternity Hospital, 37, North Portland Street

Great Grimsby.
Nursing Institution, 3, Grosvenor Crescent

Harrogate.
Trained Nurses' Institution

Leamington.
Warneford, Leamington & South Warwickshire Hospital

Leeds.
Nurses' Institute, 21, Hyde Terrace

Leicester.
Institution for Trained Nurses Aylestone Road

Liverpool.
Nurses' Institute, 70, Hope Street
28, Windsor Street

Maidstone.
Stephen Mockton Nurses' Home, West Kent Hospital

Northampton.
35, Hazlewood Road

Nottingham.
Nursing Institution, 1, Regent St.

Oxford.
36, Wellington Square

Salford.
Manchester & Salford Institution, Adelphi Terrace

Scarborough.
Trained Nurses' Institute, 1, West Park Terrace

Sheffield.
St. George's Home, 5, Clarkehouse Road
334, Glossop Road
Southport.
Trained Nurses' Home, 8, Manchester Road
Swansea.
South Wales Institute
Tunbridge Wells.
Kent Nursing Institution
Worcester.
City and County Institution

Opticians.

Curry & Paxton, 195, Great Portland St., W. and Liverpool & Bristol
Fournet, A. 18, Bentinck St. W.

Printers.

Johnston, W. & A. K. Edina Works, Edinburgh
Silverlock, H. 92, Blackfriars Road
Wodderspoon & Co. 7, Serle Street, W.C.
Wright, John & Co. Stone Bridge, Bristol

Publishers and Booksellers (Medical).

Baillière, Tindall & Cox, 20, King William Street, W.C.
Cassell & Co. (Lim.), Ludgate Hill (and Printers)
Churchill, J. & A. 7, Great Marlborough Street
Cornish Bros. New St. Birmingham
Cornish, J. E. 16, St. Ann's Square, Manchester
Danielsson & Co. 52, Beaumont St. W.
Fannin & Co. Grafton St. Dublin
Griffin, C. & Co. (Lim.) 12, Exeter Street, Strand, E.C.
Gurney & Jackson, 1, Paternoster Row, E.C.
Hirschfeld Bros., Bream's Buildings, Fetter Lane
Johnston, W. & A. K., Edina Works, Edinburgh
Kimpton, Henry, 82, High Holborn
Lewis, H. K. 136, Gower St. W.C.
Lippincott, J. B. Co. 10, Henrietta Street, Covent Garden
Livingstone, E. & S. Teviot Place, Edinburgh
Longmans, Green & Co. 39 to 41, Paternoster Row, E.C.
Low (Sampson), Marston & Co. (Lim.), Fetter Lane, E.C.
Maclehose, J. & Sons, 61, St. Vincent Street, Glasgow
Macmillan & Co. Bedford St. W.C.
Murray, James, St. Nicholas Street, Aberdeen
Oliver & Boyd, Edinburgh
Paul (Kegan), Trench, Trübner & Co. (Lim.), Charing Cross Rd. W.C.
Pentland, Young J. 38, West Smithfield, E.C. and 11, Teviot Place, Edinburgh
Renshaw, Henry, 356, Strand, W.C.
Rebman Publishing Co. (Lim.), 11, Adam Street, Strand, E.C.
Scientific Press (Lim.), 428, Strand
Simpkin, Marshall, Hamilton, Kent, & Co. (Lim.), Stationers' Hall Court & Paternoster Row, E.C.
Smith, Elder & Co. 15, Waterloo Place, S.W.
Southwood, Smith & Co. 4 King St. E.C.
Stenhouse, A. College Gate, Hillhead, Glasgow
Watt, A. P. & Co., 10, Norfolk St., W.C.
Whittaker & Co. White Hart St., Paternoster Square
Wright, John & Co. Stone Bridge, Bristol (and Printers)

Sanitary Engineers.

Crapper, T. & Co. 50 to 54, Marlborough Road, S.W.
Doulton & Co. Albert Embankment
Jennings, Geo., 65 & 67, Lambeth Palace Road, S.E.
Jones, John, 40, Sydney St., Chelsea
Llewellins & James, Bristol
McDowall, Steven & Co. (Lim.), 4, Upper Thames Street, E.C.
North British Plumbing Co. 86, Newman St. Oxford St. W.
Patent Gully Co. (Lim.) Nottingham
Reid, A. W. & Co. 69, St. Mary Axe
Sanitary Engineering & Ventilation Co. 65, Victoria Street, S.W.
Winser & Co. 52, Buckingham Palace Road, S.W.

Sanitary Surveyors.

Carter, H. C.E. 65, Victoria St. S.W.
Hallett Walter & Co., 102 & 104, Harrow Road, W.
London & Suburban Sanitary Survey Association, 34, Victoria St.
Pilditch, P. E., 17, Parliament St.
Sanitary Survey Association, 85, Gower Street, W.C.
Sanitary Engineering & Ventilation Co. 65, Victoria Street, S.W.
Tidman, Ed., C.E. 34, Victoria St., S.W.

Surgical Instrument and Appliance Manufacturers.

Arnold & Sons, West Smithfield
Bailey W. H. & Son, 38, Oxford St.
Carter A. 47, Holborn Viaduct, E.C.
Carter, John, 6A, New Cavendish Street, W.
Cocking, J. T. Plymouth
Coles, Wm. & Co., 225, Piccadilly, W.
Coxeter, James & Son, 4 and 6, Grafton Street, W.C.
Dakin Bros.—Offices, 87A, Leadenhall Street, E.C.
Dinneford & Co., 180, New Bond Street, W.
"Domen" Belts Co. 61, Moor Lane, E.C.
Down Bros. 5 & 7, St. Thomas St.
Ernst, Fr. Gustav, 80, Charlotte Street, Fitzroy Square, W.
Evans & Wormull, 31, Stamford St. S.E.
Fannin & Co. Grafton St. Dublin
Ferris & Co. Bristol
Gale, George & Sons, Leeds
Gray, Joseph & Son, Truss Works, Sheffield
Grossmith, W. R. 175, Fleet Street
Hawksley, T. 357, Oxford St. W.
Hills & Co. 46, Newcomen Street, Boro', S.E.
Hooper & Co. 7, Pall Mall, East
Hurst & Co. 66, Fenchurch Street, E.C.
Hutchinson, W. & H. Sheffield
Huxley, E. 13, Old Cavendish St. Oxford Street, W.
King, Mendham & Co. Bristol
Krohne & Sesemann, 8, Duke Street, Manchester Square, W.
Lindsey & Sons, 40, Gracechurch St.
Lynch & Co. 192, Aldersgate Street
Matthews Bros. 10, New Oxford St
Maw, S. Son & Thompson, 7 to 12, Aldersgate Street, E.C.
Mayer & Meltzer, 71, Great Portland Street, W.
Milne, John, Ladywell, S.E.
Montague, J. H., 101, New Bond Street, W.
O'Connor Extension Co., 275 & 276, High Holborn, W.C.
Reynolds & Branson, 13, Briggate, Leeds
Salmon, H. R. 42, Beaumont St. W.
Salmon, Ody & Co. 292, Strand
Schall, K. 55, Wigmore Street, W.
Schramm, K. R. Gt. Castle Street, Cavendish Square, W.
Spratt, W. H. & Brooke, 48, New Bond Street, W.
Statham, H. & Co. Corporation St. Manchester
Stubbs, J. 94, Sheaf St., Station Road, Sheffield
Ward, John, 246 & 247, Tottenham Court Road
Weiss, J. & Son, 287, Oxford Street
Winter, R. J. & Co. 55 to 59, Goodge Street, W.
Wright, C. & Co., 108, New Bond Street, W.
Wright, T. G. Denmark St., Bristol

Vaccine Lymph.

Lymph is supplied, free of charge, on application to National Vaccine Establishment, New Government Buildings, Whitehall, London, S.W.
Association for the supply of pure Vaccine Lymph, 12, Pall Mall East, S.W.
Dakin Bros., 87A, Leadenhall St.
Faulkner, W. 18, Endell Street Bloomsbury, W.C.
Ferris & Co. Bristol
Hime, Dr., Bradford, Yorks.
Rebman, F. J. 11, Adam St., Strand
Renner's (Dr.) Establishment, 186 Marylebone Road, N.W.
Somerville, R. & H. 10, Spring Gardens, Edinburgh
Têtu, M. 16, Surrey Square, Old Kent Road, S.E.

Medical and Scientific Newspapers, etc.

American Journal of Science—Monthly, 30/- per annum—Kegan Paul & Co. Charing Cross Road, W.C.

Analyst—Monthly 6d—Baillière and Co. King William Street, W.C.

Anatomy and Physiology, Journal of —24/- per annum—Williams & Norgate, Covent Garden

Annals of Surgery—Monthly 2/- — Baillière & Co., King William Street, W.C.

Anthropological Journal—Quarterly 5/—Kegan, Paul & Co. Charing Cross Road, W.C.

Asclepiad — Quarterly 2/6—Longmans & Co. Paternoster Row

Birmingham Medical Review — Monthly 6d—Hall & English, High Street, Birmingham

Boston Journal of Medicine—Weekly, 30/6 per annum—Kegan Paul & Co. Charing Cross Road, W.C.

Botanical Magazine—Monthly 3/6 —Reeve & Co. 6, Henrietta St. Covent Garden

Botany, Journal of—Monthly 1/8—West, Newman & Co. 54, Hatton Garden

Brain—Quarterly 3/6—Macmillan & Co. Bedford Street, W.C.

Braithwaite's Retrospect — Half Yearly 6/6—Simpkin & Co. Stationers' Hall Court

Bristol Medico-Chirurgical Journal —Quarterly 1/6—J. W. Arrowsmith, Bristol

British and Colonial Druggist —Weekly 3d—42 Bishopsgate Street without, E.C.

British Gynæcological Journal — Quarterly 2/6—John Bale and Sons, Gt. Tichfield Street, W.

British Homœopathic Society, Journal of—Quarterly, 2/6—Bale & Sons, Gt. Titchfield St.

British Medical Journal—Weekly 6d—429, Strand, W.C.

Chemical Industry—Journal of Society of—Monthly—East Harding Street, E.C.

Chemical News—Weekly 4d—Boy Court, Ludgate Hill, E.C.

Chemical Review—Monthly 1/—5, Furnival Street, E.C.

Chemical Society, Journal of the—Monthly, 30/- per annum—Gurney & Jackson, 1, Paternoster Row, E.C.

Chemist and Druggist, the—Weekly 4d, 10/- per annum—42, Cannon Street

Chemists and Druggists, Register of —Annual 5/—17, Bloomsbury Square

Clinical Journal—Weekly 3d—30 and 31, Temple Chambers, E.C.

Dental Association, Journal of British—Monthly 6d—Baillière and Co., King William Street

Dental Record—Monthly 6d—3, Lexington St., Golden Square

Dental Science—British Journal of —1st and 15th 6d—J. P. Segg & Co. 291, Regent Street, W.

Dentist's Register—Annually 3/9—General Medical Council, 299, Oxford Street, W.

Dermatology—British Journal of—Monthly—H. K. Lewis, 136, Gower Street, W.C.

Dublin Journal of Medical Science —Monthly 2/- —Fannin & Co.

Edinburgh Medical Jour. – Monthly 2/- —Oliver & Boyd, Edinburgh

Entomologist, Monthly Magazine—Monthly 6d — 1, Paternoster Row, E.C.

Entomologist, Newman's—Monthly 6d—23 Paternoster Row, E.C.

Geological Magazine—Monthly 1/6 —37, Soho Square, W.

Geological Society, Journal of—Irregular 5/—14, Henrietta Street

Geologist's Association's Proceedings—Quarterly 1/6—E. Stanford, 27, Cockspur Street

Glasgow Medical Journal—Monthly 2/—A. Macdougall, 7, Mitchell Lane, Glasgow

Guy's Hospital Gazette--Fortnightly 6d—42, Southwark Street.

Guy's Hospital Reports—Yearly 10/6 —J. & A. Churchill, 7, Great Marlborough Street

Health—Weekly 2d—2, Paternoster Square

Homœopathic Review—Monthly 1d —E. Gould & Son, 59, Moorgate Street, E.C.

Homœopathic World—Monthly 6d —12, Warwick Lane

Hospital—Weekly 2d—428, Strand, W.C.

Ibis, the—Quarterly 6/- —Gurney & Jackson, 1, Paternoster Row

Index Medicus—Monthly—Kegan Paul & Co. Charing Cross Road, W.C.

International Journal of the Medical Sciences—18/- per annum—Young J. Pentland, 38, West Smithfield

Irish Medical Directory—Annually 6/- —Baillière & Co. 20, King William Street, W.C.

Knowledge—Monthly 6d—326, High Holborn

Lancet—Weekly 7d—423, Strand, W.C.

Laryngology, Rhinology, & Otology, Journal of—Monthly 1/3—11, Adam Street, W.C.

Linnæan Society, Proceedings of—Annually 3/- —Longmans & Co.

Linnæan Society, Transactions—Irregular. Price varies—Society's Apartments, Burlington House

Liverpool Medical Chirurgical Journal — Half-yearly — H. K. Lewis, Gower Street, W.C.

Medical Annual—Annually 7/6—J. Wright & Co. Bristol

Medical Chronicle—Monthly 1/6 — John Heywood, Manchester

Medical Directory—Annually 14/- —J. & A. Churchill, 7, Great Marlborough Street

Medical Magazine—Monthly 2/6—Southwood, Smith & Co. 4, King Street, E.C.

Medical Pioneer — Monthly — 33, Paternoster Row, E.C.

Medical Press & Circular—Weekly 5d—A. A. Tindall, 20, King William Street

Medical Record (New York)—Weekly, 30/- per annum—Kegan Paul & Co. Charing Cross Road, W.C.

Medical Register—Annually 6/- — 299, Oxford Street, W.

Medical Student's Register—Annually 2/6—299, Oxford St. W.

Medical Temperance Journal–Quarterly 6d—33, Paternoster Row

Medical Times & Hospital Gazette—Weekly—11, Adam St., Adelphi

Mental Science, Journal of—Quarterly 3/6—J. and A. Churchill, 7, Great Marlborough Street

Meteorological Record—Quarterly —E. Stanford, 27, Cockspur St.

Meteorological Society, Journal of —Quarterly 5/- —E. Stanford, 27, Cockspur Street, S.W.

Microscopical Science, Quarterly Journal of—10/- —J. and A. Churchill, 7, Great Marlborough Street

Microscopy and Natural Science, International Journal of—Quarterly 2/6 — Baillière & Cox, King William Street

Mind—Quarterly 3/- —Williams & Norgate, Henrietta Street, W.C.

Monthly Extract of British Journal of Dental Science—Subscribers only—322, 324, Regent St., W.

Naturalist—Monthly 6d—Henrietta Street, W.C.

Nature—Weekly 6d—Macmillan & Co. Bedford Street

Nervous and Mental Diseases—Quarterly, 18/- per annum—Kegan Paul & Co. Charing Cross Road, W.C.

New Sydenham Society—Irregular — Subscription 21/- —H. K. Lewis, 136, Gower Street

New York Journal of Medicine—Weekly, 30/6 per annum—Kegan Paul & Co., Charing Cross Road, W.C.

New York Medical Journal—Weekly 33, Bedford Street, W.C.

Nursing Directory—Annually — 11, Adam Street, Adelphi.

Nursing Record—Weekly 1d—Record Press (Lim.), 376, Strand

Odontological Society, Transactions of—Monthly during Sessions 2/6—Bale and Son, 87, Great Tichfield Street

Ophthalmic Hospital Reports—Half Yearly 5/- —J. & A. Churchill, 7, Great Marlborough Street

Ophthalmic Review—Monthly 1/- —J. & A. Churchill, 7, Great Marlborough Street

Ophthalmological Society's Transactions — Yearly — J. and A. Churchill,7,Gt.Marlborough St.

Ophthalmology, Archives of—Quarterly, 20/- per annum—G. P. Putnams Sons, 24, Bedford St.

Otology, Archives of — Quarterly, 12/- per annum—G. P. Putnams Sons, 24, Bedford St., W.C.

Pathology & Bacteriology, Journal of—Quarterly—Y. J. Pentland, West Smithfield, E.C.

Pharmaceutical Journal — Weekly 4d—17, Bloomsbury Sq., W.C.

Pharmaceutical Society, Calendar of —Annually 1/- — 17, Bloomsbury Square

Pharmacy, Monthly Magazine of—Monthly 6d—Burgoyne, Burbidges & Co. 16, Coleman St.

Physiology, Journal of—21/- per volume—Ave Maria Lane

Practitioner — Monthly 1/6 — Cassell & Co. Ludgate Hill, E.C.

Psychical Research, Proceedings of Society for — Occasionally — Kegan Paul & Co. Charing Cross Road, W.C.

Public Health—Monthly 1/-—E. W. Allen, Ave Maria Lane, E.C.

Quarterly Therapeutic Review—1/- —Baiss Bros. & Co. 4, Jewry St.

Quekett Microscopic Club, Journal of—Half-yearly 2/6—Williams and Norgate, 14, Henrietta St.

Registrar General's Return of Births, Deaths & Marriages—Weekly, Quarterly & Annually — Eyre & Spottiswoode, 9, East Harding Street, E.C.

Royal College of Surgeons' Calendar —Annually 1/- — Taylor and Francis, Red Lion Court, Fleet Street, E.C.

Royal Microscopical Society, Journal of—Bi-Monthly, 30/- per annum—Williams & Norgate, Henrietta St. Covent Garden

Sanitary Journal—Monthly ; 6/- per annum–Mitchell Lane, Glasgow

Sanitary Record—Monthly 3d ; 10/- per annum — 5, Fetter Lane, E.C.

Scalpel, The — Monthly, 7/6 per annum

Science Gossip — Monthly 4d — 214, Piccadilly, W.

Scientific American—Weekly, per annum 18/- —Kegan Paul & Co. Charing Cross Road, W.C.

Scientific American Supplement—Weekly, 21/- per annum—Kegan Paul & Co. Charing Cross Road, W.C.

Scientific Review—Monthly 6d—Kent & Co. 21, Cockspur St.

Sheffield Medical Journal—Quarterly 2/-—263 Glossop Road, Sheffield

St. Bartholomew's Hospital Reports —Yearly—15, Waterloo Place

St. Mary's Hospital Gazette — Monthly —Morton & Bart, 187, Edgware Road, W.

St. Thomas's Hospital Reports—Yearly—J. & A. Churchill, 7 Great Marlborough Street

Veterinarian — Monthly 1/6 — 22½, Bartholomew Close, E.C.

Veterinary Journal—Monthly 1/6—Baillière & Co. King William St.

Westminster Hospital Reports—Yearly—7, Great Marlborough Street

Year Book of Pharmacy—Annually 10/—J. & A. Churchill, 7, Great Marlborough Street

Year Book of Treatment—Annually 7/6—Cassell & Co.

Zoological Record—Annually 30/- —Gurney & Jackson, Paternoster Row

Zoological Society of London, Proceedings—Quarterly 3/- plain ; 12/- coloured—Longmans & Co. Paternoster Row

Zoologist—Monthly 1/- — Simpkin and Co. Paternoster Row

The Medical Annual Note Book.

IT is easier to make a note of a thing, than to remember *where* the note was made. The following pages are indexed under their respective headings, and any note can be immediately found when required.

NOTES.

Copy here any formula or fact you wish to keep for reference. (These pages are indexed under the word "Notes.")

MÖLLER'S HYDROXYL—FREE OIL.

The first great improvement in the manufacture of Cod-Liver Oil was **Möller's Steam Process** (1854).

The second great improvement in the manufacture is **Möller's Hydroxyl—Free Process** (1894). (See page 854.)

PETER MÖLLER, Lofoten and Christiania, NORWAY.

NOTES.

COLES' SPIRAL SPRING TRUSS:
Inventors and Patentees,
WILLIAM COLES & CO., 225, Piccadilly, LONDON, W.

NOTES.

COLES' SPIRAL SPRING TRUSS:
Inventors and Patentees,
WILLIAM COLES & CO., 225, Piccadilly, LONDON, W.

ADDRESSES (PRIVATE).

MÖLLER'S HYDROXYL—FREE OIL.

A scientifically prepared extract of the Fresh and Healthy livers of the true Codfish, '*Gadus morrhua*,'—free from the decomposition products of Albumens, *Ptomaines*, etc., and of Fats, *Hydroxy-acids*, etc. (See page 834.)

PETER MÖLLER, Lofoten and Christiania, NORWAY.

NURSES.

Note whether Midwifery or Sick Nurse, their terms and private address.

BOOKS OR INSTRUMENTS LENT.

COLES' SPIRAL SPRING TRUSS:
Inventors and Patentees,
WILLIAM COLES & CO., 225, Piccadilly, LONDON, W.

INSTRUMENTS, APPLIANCES OR MATERIALS WANTED.

COLES' SPIRAL SPRING TRUSS:

Inventors and Patentees,

WILLIAM COLES & CO., 225, Piccadilly, LONDON, W.

DRUGS WANTED.

Palatinoids.—Miniature cachets of glycerine jujube, containing the purest drugs: perfectly absorbed, rapidly assimilated.

Bipalatinoids.—Double cachets of the same material. (See advertisement pages, Nos. xviii to xxi.)

DRUGS WANTED.

Cream of Malt Products, Concentrated Liquors and Soluble Hypodermics.—Awarded only Gold Medal at the International Medical Congress at Rome, 1894. (See advertisement pages, Nos. xviii to xxi.)

DRUGS WANTED.

CADBURY'S COCOA

Absolutely Pure, therefore Best.

CADBURY'S COCOA stands all tests, because it is absolutely pure. Referring to a thorough examination recently made by the *Lancet*, that journal says:—"The results leave no doubt of its purity and excellence, and show that there has been no treatment with fixed alkalies, or with ammonia. . . . It represents therefore the standard of highest purity at present attainable in regard to cocoa."

72nd YEAR.

YORKSHIRE INSURANCE CO.

(ESTABLISHED AT YORK 1824.)

FIRE. — LIFE. — ANNUITIES.

Capital (Authorised)	**£1,000,000**	**Accumulated Fund** -	**£991,296**
,, (Subscribed)	**£500,000**	**Annual Income** - -	**£206,244**

Trustees—W. H. HARRISON BROADLEY, Esq. The Right Hon. Lord DERWENT. The Right Hon. Lord WENLOCK.

Head Office: YORK. London Office: 82, OLD BROAD ST. E.C.

SPECIMEN RATES.—Annual Premium to insure the Sum of £100.

Age next Birthday	Premium Payable for the whole of Life.		Limited Payments				Age next Birthday.
			Table V. With Profits.		Table VI. Without Profits.		
	Table I. With Profits.	Table II. Without Profits.	20 Payments only.	25 Payments only.	20 Payments only.	25 Payments only.	
25	£2 3 10	£1 16 1	£3 3 3	£2 15 11	£2 12 1	£2 6 0	25
30	2 9 1	2 0 9	3 8 8	3 0 10	2 16 10	2 10 5	30

Endowment Insurances payable at a specified age or at previous death.

Age next Birthday.	Table III. With Profits.		Table IV. Without Profits.		* New Table with Deferred Profits.		Age next Birthday.
	Payable at 55.	Payable at 60.	Payable at 55.	Payable at 60.	Payable at 55.	Payable at 60.	
25	£3 5 6	£2 16 8	£2 15 0	£2 7 5	£2 18 11	£2 10 8	25
30	4 0 2	3 7 3	3 8 0	2 16 8	3 12 9	3 0 6	30

* In case of death before the Endowment Age, the sum insured only will be payable.

SPECIAL Attention is called to the Liberal Options which are now obtainable under any of the **Endowment Tables** of the Company, on the attainment of the Endowment Age. These are:—

1.—Payment of the full Sum Insured in Cash, with Bonuses.

2.—The Insurance to be continued without further payment of premium for the original amount of the Policy. The Bonuses, and the balance of the sum insured after providing for this Paid-up Policy, will be paid in cash.

3.—A Paid-up Policy FOR AN INCREASED AMOUNT, payable at death.

In cases 2 and 3 proof of good health will be required.

4.—A Pension to be drawn for the remainder of life, and in addition, a Paid-up Policy, without further payment of premium, for the original sum insured.

5.—A Pension for the remainder of life.

6.—A Pension to wife or child.

7.—A Deferred Pension to commence at the death of the life insured, and be payable during the life of the widow, or of a child.

FIRE INSURANCES effected by the Company on the most moderate terms, according to the nature of the risks.

INDEX TO LIFE ASSURANCE OFFICES.

A, *when Established;* B, C, D, *Annual Premiums to Insure £100 on death with Profits, at the age of 30, 40, and 50;* E, *Assurance and Annuity Funds, exclusive of Paid-up Capital.* M, *Mutual Offices;* P, *Proprietary Offices.*

Those marked with an asterisk (*) in the E column have not sent revised figures for 1895.

Title, &c., of Office.	A	B	C	D	E
					£
Abstainers and General, Life and Accident. *Sec.* R. A. Craig, A.I.A. .. .. .. P	1883	40/11	55/10	82/3	76,820
Alliance, Fire and Life, Bartholomew Lane, E.C. *Sec.*, Robert Lewis .. .. .. P	1824	48/9	64/5	90/9	2,416,632
Atlas, Fire & Life, 92, Cheapside, E.C. *Act.*, George King. *Ass. Sec.*, A. W. Yeo. *Sec.*, S. J. Pipkin. *Further particulars see page* 740 .. .. P	1808	49/3	63/7	88/8	1,452,835
British Empire, Mutual Life, 4 & 5, King William Street, E.C. *Act.* and *Sec.*, G. H. Ryan M	1847	47/2	63/9	92/3	*1,709,725
British Equitable, Life, 1, Queen Street Place, E.C. *Man. Dir. & Act.*, W. S. Gover, F.S.S., F.I.A.. .. .. P	1854	49/-	66/-	94/3	*1,431,303
British Workman's and General, Life and Endowments, Broad Street Corner, Birmingham. *Man.*, H. Port, F.S.A. *Further particulars see page* 739 .. .. P	1866	48/-	64/6	92/3	181,428
Caledonian, Fire and Life, 19, George Street, Edinburgh. *Man.*, D. Deuchar. London Office, 82, King William Street, E.C. .. .. P	1805	48/9	64/6	88/6	1,247,079
City of Glasgow, Life, 30, Renfield Street, Glasgow. *Man.*, F. F. Elderton. London Office, 12, King William Street, E.C. *Sec.*, Arthur J. Hemming, F.I.A. .. .. P	1838	48/5	64/6	89/10	*1,954,956
Clergy Mutual, Life, 2 & 3, Sanctuary, Westminster. *Act.*, F. B. Wyatt. *Sec.*, G. H. Hodgson M	1829	46/4	62/2	87/4	3,902,853
Clerical, Medical and General, Life, 15, St. James' Square, and Mansion House Buildings. *Act.*, W. J. H. Whittall .. .. .. P	1824	48/9	65/-	90/9	3,221,206
Colonial Mutual, Life and Annuity, 33, Poultry. *Man.*, E. W. Browne. *A. Sec.*, B. H. Dames M	1873	44/8	60/9	86/2	*1,662,301
Commercial Union, Fire, Life and Marine, 19 & 20, Cornhill, E.C. *Act.*, T. E. Young, B.A. P	1861	49/5	64/2	87/8	1,646,513
Co-operative, Fire, Life and Fidelity, Long Millgate, Manchester. *Man.*, James Odgers .. P	1867	45 10	61/8	87/6	10,392
Eagle, Life, 79, Pall Mall, S.W. *Gen. Man.* and *Sec.*, Geo. R. Jellicoe .. .. .. P	1807	50/8	65/5	91/4	2,322,337
Economic, Life, 6, New Bridge Street, Blackfriars *Act.* and *Sec.*, G. Todd, M.A., F.I.A. M	1823	44/3	59/9	87/6	3,544,813
Edinburgh, Life and Annuities, 22, George Street, Edinburgh. *Man.*, G. M. Low, F.F.A. *Sec.*, A Hewat, F.F.A., F.I.A. London Office, 11, King William Street, E.C. *Sec.*, Frank Griffith. P	1823	47/7	63/2	89/-	2,705,447
English and Scottish Law, Life, Annuity, Endowment, and Loan, 12, Waterloo Place, S.W. *Gen. Man.*, Arthur Jackson .. .. P	1839	48/8	64/6	90/-	*1,799,245
Equitable Life Assurance Society, Mansion House Street, E.C. *Act.*, H. W. Manly .. M	1762	53/5	67/11	90/8	*4,174,635
Equity and Law, Life, 18, Lincoln's Inn Fields, W.C. *Act.*, A. F. Burridge, F.I.A. .. .. P	1844	48/10	64/6	90/9	2,776,753
Friends' Provident. Life, Annuities, &c., Bradford. Yorkshire. *Act.* and *Sec.*, John Bell Tennant. M	1832	45/9	58/1	79/3	2,365,830
General Life, 103, Cannon Street, E.C. *Man.* and *Sec.*, John Robert Freeman. *Further particulars see page* 742 .. .. .. P	1837	49/10	65/4	92/8	1,333,557

A, *when Established*; B, C, D, *Annual Premiums to Insure £100 on death, with Profits, at the age of* 30, 40 *and* 50; E, *Assurance and Annuity Funds, exclusive of Paid-up Capital.* M. *Mutual Offices*; P. *Proprietary Offices.*

Title, &c., of Office.	A	B	C	D	E
					£
Gresham, Life, St. Mildred's House, E.C. *Man.* and *Sec.*, James H. Scott .. P	1848	49/-	65'8	94'3	5,404,577
Guardian, Fire and Life, 6, Princes St., Bank, and 21, Fleet Street. *Sec.*, T. G. C. Browne.. P	1821	48/10	64 6	89'3	*2,676,000
Hand-in-Hand, Fire, Life and Annuities, 26, New Bridge Street, Blackfriars, E.C. *Man.*, B. Blenkinsop .. .. M	1696	50 8	68 10	99 3	*2,522,199
Imperial, Life, 1, Old Broad Street, and 22, Pall Mall. *Act.* and *Man.*, J. Chisholm, F.I.A. P	1820	46/11	62/1	87/5	*2,116,498
Lancashire, Life and Fire, Exchange Street. Manchester. *Gen. Man.* Digby Johnson, London Office, 14, King William St., E.C. *Sec.*, John P. Read P	1852	48/6	63/6	90/6	961,256
Law Life, 187, Fleet Street. *Man.*, E. H. Holt. *Act.*, A. B. Adlard .. . .. P	1823	49/4	64 10	91/-	3,816,067
Law Union and Crown, Life, Fire and Annuities, 126 Chancery Lane. *Gen. Man.*, A. Mackay .. P	1825	48/4	£4 -	89/10	*2,926,104
Legal and General Life, 10, Fleet Street, E.C. *Act.* and *Man.*, E. Colquhoun, F.I.A. .. P	1836	50/9	65/11	90/9	2,881,000
Life Association of Scotland, 82, Prince's Street, Edinburgh. *Sec.*, J. Sharp. London Office, 5, Lombard Street. *Sec.*, J. C. Wardrop . P	1838	50/-	65'4	93/4	*3,999,486
Liverpool and London and Globe, Fire, Life and Annuities, 1 Dale Street, Liverpool. *Sec.*, John M. Dove. London Office, 7, Cornhill, E.C. *Sec.*, A. Hendriks, F.I.A. .. .. .. P	1836	49/3	65/6	91/3	*4,456,573
London Amicable, Life and Accident, 3, Regent Street, S.W. *Sec.*, Walter Wieland .. P	1887	47/10	63/5	91.4	*46,409
London and Lancashire, Life, 66 & 67, Cornhill, E.C. *Man.* & *Act.*, W. P. Clirehugh. *Asst. Sec.*, G. W. Mannering .. .. P	1862	46/10	£2/4	86/10	952,590
London Assurance Corporation, Fire, Life and Marine, 7, Royal Exchange. *Man.* of Life Dept., James Clunes .. .. P	1720	49/6	64/11	91'5	*2,006,573
London, Edinburgh and Glasgow, Life, Industrial, and Accidents, Farringdon Street, E.C. *Sec.*, T. V. Cowling .. .. .. P	1881	48/11	64/7	92/-	106,516
London Life Association, Lim., 81, King William St., E.C. *Act.* and *Sec.*, C. D. Higham, F.I.A. M	1806	60/4	78 10	108 4	4,263,941
Marine and General Mutual, Life and Marine, 14, Leadenhall St., E.C. *Act.* and *Sec.*, S. Day, F.I.A. M	1852	48/10	65 11	91 11	728,665
Metropolitan Life, 13, Moorgate St., E.C. *Act.*, A. Pearson. *Further particulars see page* 742 M	1835	49'9	66/4	92/-	1,998,904
Mutual Life, 39, King Street, Cheapside, E.C. *Act.* and *Man.*, G. Marks, F.I.A. *Sec.*, H. G. Rowsell .. .. M	1834	48/10	£6 8	97/11	1,278,853
National Assurance of Ireland, Fire, Life, and Annuities, 3, College Green, Dublin. *Act.* and *Sec.*, Harold Engelbach, London Office, 33, Nicholas Lane, E.C. *Res. Sec.*, Charles Smith .. P	1822	48/7	64'3	91/7	*271,573
National Guardian, Life and Loans, 21, New Oxford Street, W.C. *Sec.*, Thomas J. Bourne .. P	1865	48/6	64'8	86'8	*9,435
National Life, 2, King William Street, City. *Act.* and *Sec.*, A. W. Sunderland. *Asst. Sec.*, H. J. Lockwood .. .. M	1830	50'4	65 9	92 8	1,110,782
National Provident, 48, Gracechurch Street, E.C. *Act.* and *Sec.*, Arthur Smither .. .. M	1835	50/2	66 3	91/1	4,782,503
New York Life, Trafalgar Buildings, Trafalgar Square, London, W.C. *Gen. Man.*, Alex. J. Hawes..	1845	46/7	64/5	97/-	25,965,439
North British & Mercantile, Fire, Life & Annuities, 61, Threadneedle Street, E.C., and 64, Princess Street, Edinburgh. *Life Man.* and *Act.*, London, H. Cockburn, *Sec.*, F. W. Lance. *Further particulars see page* 741 . .. .. P	1809	49/10	66 1	91 11	1,572,526

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Title, &c., of Office.	A	B	C	D	E
					£
Northern Assurance, 1, Moorgate St., E.C. *Gen. Man.*, H. E. Wilson .. .. P	1836	48/8	£4/10	92/4	2,858,212
Norwich Union, Life, Norwich. *Sec.*, J. J. W. Deuchar. London Office, 50, Fleet Street, E.C.	1808	45/8	59/6	85/3	2,172,855
Patriotic Life and Fire, 9, College Green, Dublin. *Man.*, B. H. O'Reilly. *Act.*, Samuel Hunter. London Office, 19, King William St., E.C. *Man.*, Chas. E. Strong .. .. .. P	1824	48/8	64/5	90/4	143,189
Pearl, Life, London Bridge, City, E.C. *Man.*, P. J. Foley, M.P. .. .. P	1864	50/-	67/5	96.6	*351,732
Pelican, Life, 70, Lombard Street, 57, Charing Cross, and 10, Pall Mall. *Gen Man.*, James Sorley, F.I.A. .. .. P	1797	48/11	64/9	91/7	*1,106,315
Positive Government Security, Life, 25, Abchurch Lane, E.C. *Man.* & *Act.*, A. G. Mackenzie, F.I.A., F.F.A. .. .. P	1870	47/1	64/7	94/3	*481,488
Provident, Life, 50, Regent Street. *Sec.*, C. Stevens P	1806	50/2	66/4	92/10	*2,800,404
Provident Clerks, Life and Benevolent Fund, 27, Moorgate Street, E.C. *Sec.*, John E. Gwyer M	1840	46/4	62/8	92/2	1,800,000
Prudential (Ordinary), Life, Holborn Bars. *Sec.*, W. J. Lancaster. *Further particulars, see page* 739 .. .. P	1848	49/6	65/11	91/11	9,498,917
Refuge, Life, Oxford Street, Manchester. *Man.*, W. Proctor. London Office, 29, New Bridge Street .. .. P	1864	49/3	65/9	91/9	*86,895
Reliance, Life, 71, King William Street. *Sec.*, E. C. Griffith .. .. M	1840	49/4	65/10	94/2	*754,833
Rock, Life and Survivorship, 15, New Bridge Street, E.C. *Act.*, G. S. Crisford, F.I.A. .. P	1806	53/5	67/11	90/8	*1,894,226
Royal, Fire, Life and Annuities, Royal Insurance Buildings, Liverpool. *Man.*, Chas. Alcock. London Offices, Lombard Street. *Sec.*, John H. Croft .. .. P	1845	49/9	64/1	88/3	*4,921,036
Royal Exchange Assurance, Fire, Life, Annuities, &c., Royal Exchange, and 29, Pall Mall. *Act.*, H. E. Nightingale, F.I.A. .. .. P	1720	49/2	64/11	92/4	2,126,144
Sceptre, Life and Endowments, 40, Finsbury Pavement, E.C. *Sec.*, J. G. Phillips.. .. P	1864	48/8	64/8	90/6	*533,890
Scottish Amicable, Life, St. Vincent Place, Glasgow. *Man.*, N. B. Gunn. *Sec.*, W. G. Spens M	1826	51/9	66/3	90/1	3,473,897
Scottish Equitable, Life, 26, St. Andrew Square, Edinburgh. *Man.*, T. B. Sprague, M.A., LL.D. *Sec.*, J. J. McLauchlan. London Office, 69, King William Street, E.C. *Sec.*, W. T. Gray M	1831	50/3	65/5	90/9	3,706,098
Scottish Imperial, Life, 183, West George Street, Glasgow. *Man*, T. Wilkinson Watson. London Office, 15, King William Street, E.C. .. P	1865	46/7	63/5	91/7	408,927
Scottish, Life, Accident and Annuities, 19, St. Andrew's Square, Edinburgh. *Man.*, David Paulin, F.R.S.E. London Office, 20, King William Street, E.C. *Sec.*, George Struthers .. .. P	1881	49/5	64/6	90/5	274,751
Scottish Metropolitan, Life, 25, St. Andrew Square, Edinburgh. *Man.*, Wm. G. Bloxsom. London Office, 8, King Street, E.C. *Man.*, H. E. Marriott .. .. P	1876	40/8	54/7	79/7	*190,029
Scottish Provident, Life and Annuities, 6, St. Andrew Square, Edinburgh. *Man.*, Jas. G. Watson. *Secs.*, J. Lamb and H. R. Cockburn. London Office, 17, King William Street, E.C. *Sec.*, J. Muir Leitch .. .. M	1837	41/6	54/9	81/7	8,949,754
Scottish Temperance, Life and Accident, 81, Renfield Street, Glasgow. *Man.*, Adam K. Rodger. London Office, 96, Queen Street, Cheapside. *Man.*, W. A. Bowie .. .. P	1883	48/6	63/9	89/10	213,600

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Title, &c., of Office.	A	B	C	D	E
					£
Scottish Union and National, Fire, Life, and Annuities, 35, St. Andrew Square, Edinburgh. *Sec.*, J. K. Macdonald. London Office, 3, King William Street, E.C. *Sec.*, William Porteous.. P	1324	50/-	65/-	90/-	*3,335 918
Scottish Widows' Fund, Life and Survivorship, 9, St. Andrew Square, Edinburgh. *Man. & Act.*, A. H. Turnbull. *Sec.*, J. J. P. Anderson. London Office, 28, Cornhill, E.C. *Sec.*, J. W. Miller .. .. M	1815	51/9	66/3	90/7	12,513,968
Standard Life, 3, George Street, Edinburgh. *Man.* and *Act.*, S. C. Thomson. London Offices, 83, King William Street, and 3 Pall Mall East. *Sec.*, J. H. W. Rolland .. .. .. P	1825	48/11	64 5	89/-	7,744,651
Star, Life, Annuities, Endowments, 32, Moorgate Street, City. *Act.* and *Sec.*, H. G. Hobson P	1843	48/9	64/11	90/6	3,572,564
Sun, Life, 63, Threadneedle Street, E.C. *Act.*, R. Sewell. *Sec. & Prin. Officer*, E. Linnell P	1810	49/2	66/6	94/2	3,242,254
Union, Fire and Life, Cornhill, and Baker Street. *Sec.*. C. Darrell .. .. .. P	1714	48/9	64/6	90/10	1,695,057
United Kent, Life and Annuities, High Street, Maidstone. *Gen. Man.*, Walter L. Seyfang. London Office, 124, Cannon St., E.C. *Man.*, A. Wallis P	1824	49/8	64/3	90/5	504,335
United Kingdom Temp., &c., Life, 1, Adelaide Place, London Bridge. *Sec.*, Thomas Cash M	1840	49/10	64/11	90/6	5,831,598
Universal, Life, 1, King William Street, E.C. *Act.* and *Sec.*, Fred. Hendriks, F.I.A. .. P	1834	48/10	63/-	85/6	1,040,879
University, Life, 25, Pall Mall, S. W. *Sec.*, H. W. Andras, F.I.A. .. .. .. P	1825	50/9	64/7	87/6	1,035,479
Victoria, Life and Endowment, Memorial Hall Buildings, Farringdon Street, E.C. *Sec.*, Arthur J. Cook, A.I.A. .. .. .. M	1860	49/3	65/7	93/-	*67,516
Wesleyan and General, Life, Annuities, Sickness, Moor Street, Birmingham. *Gen. Man.* R. A. Hunt, F.S.S., A.I.A. London Office, 2, Finsbury Square, E.C. .. .. M	1841	48/9	66/6	96/3	288,087
Westminster and General, Life, 28, King St., Covent Garden, W.C. *Act.*, Ernest Woods, F.I.A. P	1836	48/10	65/-	90/6	548,121
Yorkshire, Fire and Life, St. Helen's Square, York. *Sec.*, J. A. Cunninghame. London Office, 82, Old Broad Street, E.C. *Sec.*, James Hamilton. *Further particulars as to a new Endowment Scheme, combining a large amount of assurance with a low premium, see page* 734 .. .. P	1824	49/1	64/9	91/7	670,397

Medical Sickness and Accident, 33, Chancery Lane, W.C. *Sec.*, F. Addiscott, F.I.A., secure to registered members of the Med. Prof., and Licentiates of Dental Surgery in United Kingdom, a weekly allowance during incapacity from sickness or accident. Mutual. Established 1884. Assurance and Annuity Funds £90,000.

Prudential Assurance Compy.,

LIMITED.

HOLBORN BARS, LONDON.

DIRECTORS.

EDGAR HORNE, Esq. | H. A. HARBEN, Esq.
HENRY HARBEN, Esq., J.P. | W. T. PUGH, Esq.
ROBERT BARNES, M.D., F.R.C.P. | PERCY T. REID, Esq.
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THOMAS WARRIE, Esq.

MANAGERS.

THOMAS C. DEWEY, Esq. | WILLIAM HUGHES, Esq.
Sub-Manager—F. FISHER, Esq. | *Actuary*—F. SCHOOLING, Esq

Every description of Life Assurance and Annuity Business Transacted.

INVESTED FUNDS - £23,000,000.

The Last Annual and Valuation Reports can be obtained on application.

W. J. LANCASTER, *Secretary.*

British Workman's & General Assurance Company, Ltd.

ESTABLISHED 1866.

CHIEF OFFICES:

BROAD STREET CORNER, BIRMINGHAM.

ALL KINDS OF ORDINARY AND INDUSTRIAL POLICIES ISSUED.

The Present **INCOME** is at the rate of **£430,000** per Annum.
The Total Amount paid in **CLAIMS** exceeds **£1,500,000.**
The **FUNDS** exceed **£226,000.**

Cash Surrender Value.—Surrender values have always been a distinctive feature of this Company's management.
Loans granted on Policies to the extent of their surrender value.
Lapsed Policies may be Revived at any time within one year from date of lapse.

1895. S. J. PORT, *Secretary.* HENRY PORT, *Managing Director.*

ATLAS ASSURANCE CO.

FIRE. *ESTABLISHED* 1808. LIFE.

HEAD OFFICE, LONDON—92, CHEAPSIDE, E.C.

DIRECTORS:

SIR WILLIAM J. W. BAYNES, BART., *Chairman.*
CHARLES ANDREW PRESCOTT, ESQ., *Deputy-Chairman.*

HERBERT BROOKS, ESQ.
JAMES PATTISON CURRIE, ESQ.
WILLIAM COTTON CURTIS, ESQ.
BENJAMIN BUCK GREENE, ESQ.
FREDERICK GREENE, ESQ.
JOHN OLIVER HANSON, ESQ.
FRANCIS ALEXANDER JOHNSTON, ESQ.
OSWALD CECIL MAGNIAC, ESQ
EUGENE FREDK. NOEL, ESQ.
RICHARD BLANEY WADE, ESQ.

MEDICAL OFFICER—BUXTON SHILLITOE, ESQ., F.R.C.S.
BANKERS—Messrs. PRESCOTT, DIMSDALE, CAVE, TUGWELL & CO., LIMITED.
ACTUARY—GEO. KING. ASST. SECRETARY—ALFD. W. YEO.
SECRETARY—SAML. J. PIPKIN.

BRANCHES.

LONDON, West End, 4, Pall Mall East, S.W.
BIRMINGHAM, 9, Bennett's Hill.
BRISTOL, 20, Clare Street.
LEEDS, 1, East Parade.
LIVERPOOL, 1, Tithebarn Street.
MANCHESTER, 30, Booth Street, Cooper St.
GLASGOW, 149, West George Street.

The GROWTH OF THE BUSINESS is shown by the following figures:

		FIRE PREMIUMS.		LIFE PREMIUMS.		TOTAL INCOME.
1883	-	£95,898	...	£79,734	...	£256,554
1894	-	362,853	...	132,069	...	580,260

Total Assets (31st December, 1894), £2,072,962.

The Company has paid in Claims upwards of £12,000,000 sterling.

LIFE DEPARTMENT.

Life Policies are granted under any one of the following six principal plans:

I.—ORDINARY WITH PROFIT POLICIES, at moderate rates securing large bonuses.
II.—POLICIES AT "COST PRICE," giving large Assurances at small immediate outlay.
III.—TONTINE INVESTMENT POLICIES for a fixed sum during a term of years, and large accumulations of bonus at the end of that term.
IV.—NON-PROFIT POLICIES, of use principally in financial transactions.
V.—DOUBLE ENDOWMENT ASSURANCES, a safe and profitable investment for annual savings.
VI.—RENEWABLE TERM POLICIES, or temporary Assurances at minimum rates, renewable without fresh medical examination.

The BONUSES declared have always been large, and all interest earned on the investments over and above 2½ per cent. will contribute to future profits.

FIRE DEPARTMENT.

LOSSES OCCASIONED BY LIGHTNING will be paid whether the property be set on fire or not.
LOSS OR DAMAGE caused by Explosion of Coal Gas in any building insured will be made good.
SEVEN YEARS' POLICIES granted on payment of Six Years' premiums.

SAML. J. PIPKIN, *Secretary.*

ESTABLISHED 1809.

NORTH BRITISH and MERCANTILE

INSURANCE COMPANY.

Chief Offices:

61 Threadneedle St., London. 64 Princes St., Edinburgh.

Branch Offices in all Important Centres.

TOTAL FUNDS

At 31st December, 1894,

Over Eleven-and-a-half Millions Sterling.

INCOME FOR 1894—

£2,906,678.

Ninety per cent. of Life Profits divided amongst the Assured on the participating scale.

THE PROFITS ARE DIVIDED EVERY FIVE YEARS.

Family Policies in various forms.	**Death Duty Policies.**
Policies payable during lifetime.	**Partnership Insurances.**
Premium ceasing at an agreed age.	**Annuities on one or more lives.**
Pensions, &c., &c.	**Provident Insurances on Children.**

FIRE DEPARTMENT.

Property of nearly every description, at home and abroad, insured at the lowest rates. Losses by Lightning, Damages by Explosion of Gas in buildings (other than Gas Works), made good. Rents of Buildings insured.

It is worthy of notice that while the Company transacts both Fire and Life Insurance Business, the Accumulated Funds of each Department are, by Special Act of Parliament, kept *entirely separate and distinct*, the funds of the one Department not being available for the obligations of the other. The Funds of each Department are accordingly, in this Company, *separately invested*.

☛ ***Prospectuses and full information may be obtained from the Chief Offices as above, or any of the Company's Agencies and Branches.***

LIFE ASSURANCE AT COST PRICE.

METROPOLITAN
LIFE ASSURANCE SOCIETY,

13, MOORGATE STREET, LONDON.

Established 1835, for Mutual Assurance.

Directors.

Richard B. Barron, Esq.
George R. Burnett, Esq.
Edward Caffin, Esq.
Russell J. Colman, Esq., Norwich.
Henry W. Dauglish, Esq.
William S. Deacon, Esq.
Rt. Hon. Sir A. B. Forwood, Bart., M.P. Liverpool.
J. H. Fox, Esq., Wellington, Somerset.
Wm. Grant, Esq., Portsmouth.
Alex. P. Hogarth, Esq., Aberdeen.
William C. H. Hunt, Esq.
F. Harwood Lescher, Esq.
S. S. Lloyd, Jun., Esq., Birmingham.
William C. Scott, Esq.
Walter B. Tidd, Esq.

Medical Officers.

R. Clement Lucas, Esq., B.S., 50, Wimpole Street, W.
J. Kingston Fowler, Esq., M.D., 35, Clarges Street, W.

Actuary—Arthur Pearson, Esq. Assistant Actuary—L. M. Simon, Esq.

Sum Assured, £5,500,000. Assets, £2,000,000.

NO COMMISSION PAID, AND NO AGENTS EMPLOYED.
EXPENSES OF MANAGEMENT UNDER 5 PER CENT. OF INCOME.
NO SHAREHOLDERS TO PARTICIPATE IN PROFITS.

GENERAL LIFE ASSURANCE CO.

ESTABLISHED 1837.

CAPITAL AND RESERVES, £2,500,000.

BOARD OF DIRECTORS.

Sir Andrew Lusk, Bart., Chairman
Principal Angus, D.D.
Lieut.-Col. F. D. Grey
Jas. S. Mack, Esq., J.P., D.L.
Lord Gilbert Kennedy
Hon. R. C. Grosvenor
Henry William Ripley, Esq.
William Strang, Esq.
Rt. Hon. C. Pelham Villiers, M.P.

MEDICAL OFFICERS.

P. H. Pye-Smith, Esq., M.D., F.R.S., 48, Brook Street.
Frederick Taylor, Esq., M.D., 20, Wimpole Street, W.

Advances made on Reversions, Life Interests, and on Personal Security in connection with a Life Policy.

A permanent reduction of Six Per Cent. made to the Medical Profession.

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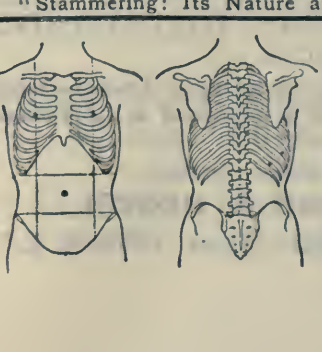

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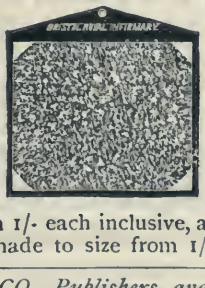

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Two Open Entrance Science Scholarships, of £150, and £60, are awarded in October to First Year's Students after an Examination in Chemistry, Physics, and Botany, Zoology, or Physiology.

One Open Entrance Scholarship in Anatomy, Physiology, and Chemistry, of the value of £50, for Third Year's Students.

FIRST YEAR'S PRIZES.—Winter: The William Tite Scholarship, £27 10s.; College Prizes, £20 and £10. Summer: College Prizes, £15 and £10.

SECOND YEAR'S PRIZES.—Winter: The Peacock Scholarship, £38 10s., tenable for two years; College Prizes, £20 and £10. Summer: College Prizes, £15 and £10.

THIRD YEAR'S PRIZES.—Winter: The Musgrove Scholarship, £38 10s.; College Prizes, £20, £15, and £10. Summer: College Prizes, £15 and £10.

The Cheselden Medal, annually, for Surgery and Surgical Anatomy.
The Mead Medal, annually, for Medicine, Pathology, and Hygiene.
The Grainger Testimonial Prize, annually, for an Anatomical and Physiological Essay.
The Solly Medal and Prize, biennially, for Surgical Reports.
The Beaney Scholarship, biennially, for Surgery and Surgical Pathology.
The Bristowe Medal, annually, for Pathology.
The Treasurer's Gold Medal, annually, for General Proficiency and Good Conduct.
The Salters' Company Research Fellowship of the annual value of £100, tenable for three years.

Four House Physicians, four House Surgeons, four Assistant House Surgeons, a Senior and Junior Obstetric House Physician, are selected every three months from Students holding qualifications; two Ophthalmic House Surgeons, one with a salary of £50, and the other provided with Commons, are also appointed. Clinical Assistants in the Special Departments for Diseases of the Skin, Throat and Ear.

Clinical Clerks and Dressers to Out and In-Patients. (All these appointments are free.)

Two Registrars, at a Salary of £100 each, are chosen from Senior Students.

An Obstetric Tutor and Registrar at a Salary of £50.

A Resident Assistant Physician and a Resident Assistant Surgeon at a Salary of £100 per annum each, are appointed from time to time.

Assistants to the Teachers of Practical Surgery, to the Demonstrators of Morbid Anatomy, and in the Physiological Laboratory, Prosectors, and Obstetric Clerks are also appointed.

The Winter Session commences on October 1st, and the Summer on May 1st. Students may enter at either Session.

The Fees may be paid in one sum or by instalments. Special Entries may be made to Lectures and Practice. Students can enter in the second or subsequent years at a reduced fee. Dental Students are admitted. Qualified Practitioners can obtain perpetual tickets on payment of a small fee.

Special Classes are held for the Preliminary Scientific and Intermediate M.B. Examinations of the University of London.

G. H. MAKINS, *Dean.*

Any further information may be obtained from Mr. RENDLE, *Medical Secretary.*

University of Durham.

COLLEGE OF MEDICINE, NEWCASTLE-UPON-TYNE.

DEGREES IN MEDICINE, SURGERY, AND HYGIENE.—Six Degrees and one Diploma, are conferred by the University of Durham—viz., the Degrees of Bachelor in Medicine, Doctor in Medicine, Bachelor in Surgery, and Master in Surgery, Bachelor in Hygiene, and Doctor in Hygiene; and Diploma in Public Health.

Attendance at the University of Durham College of Medicine during one of the five years of professional study, or subsequently to qualification elsewhere, is required as part of the curriculum for the Degrees, except in the case of Practitioners of more than fifteen years' standing, who have attained the age of forty years, who can obtain the Degree after examination only.

The first two Examinations for the Degree of M.B. may be passed prior to the commencement of attendance at Newcastle.

A candidate who has a recognized qualification, or who has passed the First Examination of the Conjoint Board in England of the Royal College of Physicians of London and the Royal College of Surgeons of England, will be exempt from the First Examination of the University of Durham, except in the subjects of Chemistry and Physics.

A candidate who has passed the First and Second Examinations of the University will be exempt from the First and Second Examinations of the Conjoint Board in England, and will be entitled to present himself for the Final Examination of the Board on the completion of the necessary curriculum.

The Extra Arts Examination must be passed previously to the candidate's entry for his Final Examination for the Degree.

All information, together with Examination Papers, &c., is given in the Calendar of the University of Durham College of Medicine, Newcastle-upon-Tyne, or may be obtained from the Secretary at the College.

Scholarships, &c.—A University of Durham Scholarship, value £100, for proficiency in Arts awarded annually to full Students in their first year only. The Dickinson Scholarship—value, the interest of £400, and a Gold Medal—for Medicine, Surgery, Midwifery, and Pathology. The Tulloch Scholarship—value, the interest of £400—for Anatomy, Physiology, and Chemistry. The Charlton Scholarship—value, the interest of £700—for Medicine. The Gibb Scholarship—value, the interest of £500—for Pathology. The Luke Armstrong Scholarship—interest on £680—awarded to the Candidate who obtains highest marks in the honours division in the final examination in April and September in each year. The Stephen Scott Scholarship—interest on £1000—for promoting the study of Surgery and allied subjects. Heath Scholarship—the late George Yeoman Heath, M.D., M.B., D.C.L., F.R.C.S., President of the University of Durham College of Medicine, has bequeathed the sum of £4000 to found a Scholarship in Surgery, the interest to be awarded every second year. Gibson Prize, value, the interest of £225, for Midwifery and Diseases of Women and Children. The Goyder Memorial Scholarship (at the Infirmary)—value, the interest of £325—for Clinical Medicine and Clinical Surgery. At the end of each Session a Prize of Books and Honours Certificates are awarded in each of the regular Classes. Assistant Demonstrators of Anatomy, Prosectors, and Assistant Physiologists are elected yearly. Pathological Assistants, Assistants to the Dental Surgeon, Assistants in the Eye Department, Clinical Clerks, and Dressers are appointed every three months.

The Royal Infirmary contains 280 beds. Clinical Lectures are delivered by the Physicians and Surgeons in rotation. Pathological Demonstrations are given as opportunity offers by the Pathologist. Practical Midwifery can be studied at the Newcastle Lying-in-Hospital, where there is an Out-door Practice of about 500 cases annually.

FEES.

(a) A Composition Ticket for Lectures at the College may be obtained—

I. By payment of 70 guineas on entrance.

II. By payment of 45 guineas at the commencement of the First Year, and 35 guineas at the commencement of the Second Year.

III. By three annual instalments of 35, 30, and 20 guineas respectively, at the commencement of the Sessional year.

(b) Fees for attendance on Hospital Practice:—

For 3 months' Med. & Surg. Practice, £5 5s. | For 1 year's Med. & Surg. Practice, £12 12s.
" 6 " " " £8 8s. | " perpetual " " " £25 25s.

Or by three instalments at the commencement of the Sessional year—viz., First year, 12 guineas; Second year, 10 guineas; Third year, 6 guineas. Or by two instalments—viz., First year, 14 guineas; Second year, 12 guineas.

In addition to the above fees, the Committee of the Royal Infirmary require the payment of 2 guineas yearly up to three years from every Student attending the Infirmary for a year or part of a year. After three years of attendance, such payment will be no longer necessary.

(c) Single Courses of Lecture, 5 guineas.

Fees for Lectures, &c., at the College must be paid to the Secretary, and Fees for Hospital Practice to the House-Physician at the time of entry.

Further particulars may be obtained from the Sec., PROF. HOWDEN, at the College.

UNIVERSITY of EDINBURGH.

Principal—SIR WILLIAM MUIR, K.C.S.I., D.C.L., LL.D., Ph.D.

The **Winter Session** opens about the middle of October and closes about the end of March; the **Summer Session** opens at the beginning of May and closes about the end of July.

FACULTY OF MEDICINE.

Dean—Professor THOMAS R. FRASER, M.D., LL.D., F.R.S.

The Faculty embraces twelve Chairs and seven Lectureships; and attached to these Chairs there are about thirty Assistants and Demonstrators. Instruction is given in all the main branches of Medical Science, viz.:—

PROFESSORS.

CHEMISTRY—Alex. Crum Brown, M.D., D.Sc., LL.D. NATURAL HISTORY—J. Cossar Ewart, M.D. BOTANY—Isaac Bayley Balfour, M.D., D.Sc. ANATOMY—Sir William Turner, M.B., D.C.L., LL.D. PHYSIOLOGY—William Rutherford, M.D. PATHOLOGY—William S. Greenfield, M.D. MATERIA MEDICA—T. R. Fraser, M.D., LL.D. MEDICINE—Sir T. Grainger, Stewart, M.D. SURGERY—John Chiene, M.D. MIDWIFERY—Alexander Russell Simpson, M.D. FORENSIC MEDICINE—Sir D. Maclagan, M.D., LL.D. CLINICAL SURGERY—Thomas Annandale, M.D. CLINICAL MEDICINE—Professors Sir T. Grainger Stewart, Fraser, Greenfield, and Simpson (on Diseases of Women).

UNIVERSITY LECTURERS.

MENTAL DISEASES—T. S. Clouston, M.D. DISEASES OF THE EYE—D. Argyll Robertson, M.D. CLINICAL INSTRUCTION ON DISEASES OF CHILDREN—J. Carmichael, M.D., & J. Playfair, M.D. EMBRYOLOGY AND VERTEBRATE ZOOLOGY—J. BEARD, D.Sc. REGIONAL ANATOMY—D. Hepburn, M.D. EXPERIMENTAL PHARMACOLOGY—J. Tillie, M.D. PATHOLOGICAL BACTERIOLOGY—R. Muir, M.D.

Practical Instruction is afforded in Laboratories furnished with the necessary appliances, and in Tutorial and Practical Classes in connection with all the above Chairs, and under the superintendence of the Professors, and opportunities are afforded to Students and Graduates to extend their practical knowledge and engage in original research.

Four Degrees in Medicine and Surgery are conferred by the University of Edinburgh, viz., Bachelor of Medicine (M.B.), Bachelor of Surgery (Ch.B.), Doctor of Medicine (M.D.), and Master of Surgery (Ch.M.); and the University may also confer Diplomas in Special Branches of Medical and Surgical Practice on Graduates in Medicine and Surgery of the University.

The minimum total amount of Class Fees for M.B. and Ch. B., including Hospital Fee (£12) is about £115. and the Matriculation and Examination Fees amount to £28 7s. An additional Fee of £10 10s. is payable by those who proceed to M.D., and £10 10s. by those who proceed to Ch.M.

The annual value of the Bursaries, Prizes, Scholarships, and Fellowships in the Faculty of Medicine amounts to about £3,253, and that of the other Bursaries, etc., open to Students of Medicine, amounts to about £1,160.

Instruction is also given in Public Health, and the Degrees of B.Sc. and D.Sc. in Public Health are conferred by the University.

Residences for Students, Graduates, and others are situated within easy reach of the University. Board and lodging on moderate terms.

Further information as to Matriculation, the Curricula of Study for Degrees, etc., may be obtained from the Clerk of Senatus, or the Dean of the Faculty of Medicine; and full details are given in the University Calendar, published by James Thin, 55 South Bridge.

By Authority of the Senatus,

JOHN KIRKPATRICK, *Secretary of Senatus.*

November, 1895.

Royal College of Surgeons of Edinburgh.

FOUNDED 1505.

Copies of the Regulations for the Fellowship, Licence, and Licence in Dental Surgery, with dates of Examinations, Curricula, etc., for the year 1895-6, are now ready, and may be had on application to

JAMES ROBERTSON, Solicitor, 1 GEORGE SQUARE, EDINBURGH,
Clerk to the College.

University College, BRISTOL.

FACULTY OF MEDICINE.

WINTER SESSION - - - MONDAY, October 7th, 1895.
SUMMER SESSION - - - WEDNESDAY, May 6th, 1896

Courses of Lectures:

Medicine—Profs. E. MARKHAM SKERRITT, M.D. Lond., B.S., B.A., F.R.C.P., and J. E. SHAW, M.B. Edin.
Surgery—Prof. J. GREIG SMITH, M.A., M.B., C.M.
Anatomy—Prof. EDWARD FAWCETT, M.B., C.M. Edin.
Practical Anatomy—Demonstrators, J. P. BUSH, M.R.C.S., C. A. MORTON, F.R.C.S., and F. H. EDGEWORTH, B.A., M.B., B.C. Cantab., B.Sc. Lond.
Physiology—Prof. G. MUNRO SMITH, M.R.C.S.
Chemistry—Lecturer, T. COOMBER, F.C.S.
Public Health—Lecturer, D. S. DAVIES, M.D. Lond., D.P.H. Cantab.
Midwifery and Diseases of Women—Prof. A. E. AUST LAWRENCE, M.D.
Medical Jurisprudence—Lecturers, R. EAGER, M.D. Lond., and A. J. HARRISON, M.B. Lond.
Pathology and Morbid Anatomy—Prof. J. MICHELL CLARKE, M.A., M.D. Cantab., M.R.C.P.
Operative Surgery—Lecturer, C. F. PICKERING, F.R.C.S.
Practical Surgery—Lecturer, A. W. PRICHARD, M.R.C.S.
Materia Medica, Pharmacology, and Therapeutics—Lecturer, A. B. PROWSE, M.D. Lond. F.R.C.S.
Practical Physiology and Histology—Lecturer,
Biology—Lecturers, Prof. C. LLOYD MORGAN, and S. H. REYNOLDS, M.A.
Practical Chemistry—Lecturer. T. COOMBER, F.C.S.
Comparative Anatomy—Lecturer, Prof. C. LLOYD MORGAN.
Dental Surgery—Lecturer, W. R. ACKLAND, M.R.C.S., L.D.S.
Dental Mechanics and Metallurgy—Lecturer, C. A. HAYMAN, L.R.C.S., L.D.S.
Medical Tutor—A. E. H. PINCH, M.R.C.S.
Physiological Assistant—E. V. FOSS.

COMPOSITION FEE FOR LECTURES—**65** guineas or **55** guineas.

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FEE for the entire Course, **20** guineas.

HOSPITAL PRACTICE may be attended either at the Bristol Royal Infirmary or at the Bristol General Hospital.

FEES (including Clinical Lectures)—Infirmary: Perpetual Medical and Surgical Practice, 20 guineas each, or in one payment, 35 guineas. Hospital: Perpetual Medical and Surgical Practice, £20 each, or, in one payment, 35 guineas.

SCHOLARSHIPS AND PRIZES.—Numerous valuable Scholarships and Prizes are offered by the Faculty of Medicine, and by the Infirmary and the Hospital.

An Important Medical Library exists in the College, consisting of the combined libraries of the Faculty of Medicine, the Bristol Medico-Chirurgical Society, the Bristol Royal Infirmary, and the Bristol General Hospital. Students have the privilege of using this Library.

Honorary Librarian, L. M. GRIFFITHS, M.R.C.S.

For Prospectuses and particulars apply to

E. MARKHAM SKERRITT, M.D., *Dean.*

St. Mark's Hospital

FOR

FISTULA AND OTHER DISEASES OF THE RECTUM.

CITY ROAD, LONDON, E.C.

FOUNDED 1835.

Physician:

F. DE HAVILLAND HALL, Esq., M.D., 47, Wimpole Street, W.

Surgeons:

ALFRED COOPER, Esq., F.R.C.S., 9, Henrietta Street, Cavendish Square, W.

DAVID HENRY GOODSALL, Esq., F.R.C.S., 17, Devonshire Place, Upper Wimpole St., W.

Assistant Surgeon:

F. SWINFORD EDWARDS, F.R.C.S., 55, Harley Street, Cavendish Square, W.

The days for attendance of Out-patients are, Women—Wednesdays, at 9.30 o'clock in the morning. Men—Saturdays at 2 o'clock in the afternoon. *Punctually.*

Operations take place on Mondays, 2 o'clock; Tuesdays, 2.30 o'clock, in the afternoon.

The practice of this Hospital is free to Medical Men and Students.

Clinical Instruction is given by the Surgeons both in the Out-patient Department and in the Wards.

For further particulars apply to ARTHUR LEARED, *Secretary.*

GORDON HOSPITAL,

FOR

FISTULA, PILES, and other DISEASES OF THE RECTUM.

276 & 278, Vauxhall Bridge Rd., London, S.W.

(ESTABLISHED 1884.) (*Close to Victoria Station.*)

President—The Right Honourable Lord Herschell. G.C.B.

Treasurer—Sir Arthur N. Birch, K.C.M.G. | *Bankers*—Messrs. Hoare, 37, Fleet Street.

Honorary Medical Staff.

Consulting Physician—Sir Francis Henry Laking, M.D., M.R.C.P., 62, Pall Mall, S.W.

Surgeons
- W. T. Whitmore, Esq., F.R.C.S., 7, Arlington Street, Piccadilly, S.W.
- C. J. Ogle, Esq., M.R.C.S., 1, Cavendish Place, Cavendish Square, W.
- F. Bowreman Jessett, Esq., F.R.C.S., 1, Buckingham Palace Mansions, S.W.
- Edgar Hughes, Esq., F.R.C.S., 10, Old Cavendish Street, W.

Anæsthetist—A. G. Fausset, Esq., M.B., 66, Belgrave Road, S.W.

Matron—Miss Maxwell. *Secretary*—Chas. A. Harrison.

The Management is vested in a Committee of Governors who are elected at the Annual Meeting. The practice is open to the profession. Operating day, Tuesday, at 9 o'clock. Out-patients daily at 2, and Tuesday evening at 8. 20 Beds. Free to the necessitous poor. Paying patients admitted if unable to afford operative treatment at home. In every case all moneys received from patients, or whatsoever source, are entirely devoted to the Hospital.

In-Patients during 1894 -	213.	Since foundation -	1376.
Out-Patients ,, ,, -	740.	,, ,, -	6632.
Total Attendances ,, -	3728.	,, ,, -	24,376.

Guy's Hospital Medical School.

The Hospital contains 695 Beds, of which 500 are in constant occupation.

Special Classes are held for Students preparing for the Examinations of the University of London, and other Higher Examinations.

APPOINTMENTS.

All Hospital Appointments are made strictly in accordance with the merits of the Candidates, and without extra payment.

ENTRANCE SCHOLARSHIPS, Yearly in September.

Two Open Scholarships in Arts, one of the value of £100 open to candidates under 20 years of age, and one of £50, open to candidates under 25 years of age. Two Open Scholarships in Science, one of the value of £150, and another of £60, open to Candidates under 25 years of age.

PRIZES AND SCHOLARSHIPS

Are awarded to Students in their various years, amounting in the aggregate to more than £650.

DENTAL SCHOOL.

A recognised Dental School is attached to the Hospital, which affords to Students all the instruction required for a Licence in Dental Surgery.

COLLEGE.

The Residential College accommodates about 50 Students in addition to the Resident Staff of the Hospital. It contains a large Dining Hall, Reading Room, Library, and Gymnasium for the use of the Students' Club.

For Prospectus and further information, apply to the Dean, Dr. SHAW, Guy's Hospital, LONDON BRIDGE, S.E.

SAMARITAN FREE HOSPITAL

FOR WOMEN AND CHILDREN.

MARYLEBONE ROAD, LONDON, N.W.

Bankers—Sir SAMUEL SCOTT, Bart., and CO., 1, Cavendish Square.

THIS Hospital is for the reception of **Poor** Women afflicted with diseases **peculiar** to their sex. It has become world-famous for the treatment of internal tumours. Poor Women suffering from such diseases, and Children from all diseases, treated in the Out Department. No Payment demanded for Medicine. No Governor's Letter required by either **In-** or **Out-Patients,** the admission being **Entirely Free.**

OPERATION DAYS:

Physicians—Monday, 2 p.m., *Surgeons*—2.30 p.m. Other days, 9.30 or 2.30.

Duly qualified Practitioners only are allowed to witness operations.

All applications for admission to be addressed to the Secretary; and when the patient is unable by illness or distance to apply personally, a printed form will be furnished, which must be returned to the Sec., duly filled up.

Out-Patients' Entrance—171, MARYLEBONE ROAD.

Attendances daily (Sundays excepted) from 12.0 to 2.0 p.m.

Qualification of Governors,—Annual Subscrip., £2 2s. Life Subscrip., £21.

Contributions Much Needed. **GEORGE SCUDAMORE,** *Secretary.*

ST. PETER'S HOSPITAL

For Stone, Stricture, & Urinary Diseases, &c.

ESTABLISHED 1860.

HENRIETTA ST., COVENT GARDEN, W.C.

President—Rt. Hon. The Earl of Dunraven and Mount Earl, K.P.
Treasurer—F. A. Bevan, Esq.

St. Peter's Hospital is intended for Persons of both Sexes suffering from Stone in the Bladder and other Diseases of the Genito-Urinary Organs, and contains 24 Beds, and 2 Private Wards for Paying Patients.

The number of Patients treated during the last twelve months was **448** In-Patients, and **4,637** New Out-Patients, the latter being seen on Monday at 2 and 5; Tuesday at 2; Wednesday at 5; Thursday at 2; Friday at 2, Women and Children only; Saturday at 4.

A Donation of Ten Guineas constitutes a Life Governor; a Subscription of One Guinea an Annual Governor. Subscriptions and Donations will be thankfully received by Messrs. Barclay, Bevan & Co., 54, Lombard Street, E.C.; Messrs. Hoare & Co., 37, Fleet Street, E.C.; or by

IRWIN H. BEATTIE, *Secretary.*

ROTUNDA LYING-IN HOSPITAL, DUBLIN.

Master:
W. J. SMYLY, M.D. Dub., F.R.C.P.I.

Assistant Physicians:
H. WILSON, L.R.C.S.I., L.R.C.P.I.
HENRY JELLETT, M.B., B.Ch., B.A.O.

Extern Maternity Assistant:
C. JOHNS, M.B., B.Ch., B.A.O.

Accommodation is provided for a limited number of Intern Pupils.
— PUPILS CAN ENTER AT ANY TIME. —

TERMS OF ATTENDANCE.

INTERN PUPILS.		EXTERN PUPILS.	
For Six Months	£21 0	For Six Months	£10 10
,, Three Months ...	12 12	,, Three Months ...	6 6
,, Two Months	9 9		
,, One Month	6 6		

Application to be made to the Master or Assistant Physicians at the Hospital, Great Britain Street.

FEMALE PUPILS are trained as Nurses and Midwives, Fee 25 guineas. Application to be made to the Lady Superintendent.

The MIDDLESEX HOSPITAL MEDICAL SCHOOL.

Hospital Staff and Lecturers.—Consulting Physician: Dr. H. Thompson. Physicians: Dr. Cayley, Dr. Coupland, Dr. Douglas Powell, Dr. Fowler. Obstetric Physician: Dr. W. Duncan. Assistant Physicians: Dr. C. Y. Bliss, Dr. W. Pasteur, Dr. W. E. Wynter, Dr. A. F. Voelcker. Consulting Physician to Skin Department: Dr. Robert Liveing. Physician to Skin Department: Dr. Pringle. Assistant Obstetric Physician: Dr. R. Boxall. Consulting Surgeon: Mr. Nunn. Surgeons: Mr. Hulke, F.R.S., Mr. Lawson, Mr. Henry Morris, Mr. Andrew Clark. Assistant Surgeons: Mr. Pearce Gould, Mr. J. B. Sutton, Mr. L. Hudson. Ophthalmic Surgeon: Mr. Wm. Lang. Aural Surgeons: Mr. L. Hudson. Consulting Dental Surgeon: Mr. Turner. Dental Surgeon: Mr Storer Bennett. Assistant Dental Surgeon: Mr. Wm. Hern. Other Lecturers: Dr. Plimpton, Dr. Mickle.

SIXTEEN RESIDENT CLINICAL APPOINTMENTS are open to Students annually.

ALL CLERKSHIPS and DRESSERSHIPS are awarded without fee.

TWO BRODERIP SCHOLARSHIPS, of the annual value of £80 and £20 respectively, each tenable for two years, are awarded every year for proficiency in Clinical Knowledge.

THE MURRAY SCHOLARSHIP, founded in connection with the University of Aberdeen, is awarded every third year to a Student of the Middlesex Hospital.

The GOVERNORS' PRIZE OF TWENTY GUINEAS is given annually to the Student who shall have most distinguished himself in Clinical work in the Out-patient Department in his final year.

The HETLEY PRIZE, value £25, is awarded annually for proficiency in Clinical Medicine, Surgery, and Obstetrics.

The LYELL MEDAL, value £5 5s., is awarded annually to second year's Students.

PRIZES.—A Prize in Elementary Anatomy and Physiology, value £5 5s., will be given to the Student who, at the end of his first Winter Session, shall pass the best written and practical examination.

An Exhibition of the value of £10 10s. will be given at the end of his second Winter Session to the Student who shall pass the best written and practical examination in Anatomy and Physiology.

Middlesex Hospital Entrance Scholarships.—Entrance Scholarships in Classics, Mathematics and Natural Science are offered for competition at the commencement of the Winter Session. Full particulars may be obtained on application to the Dean. Successful candidates are required to become general students of the School.

SCHOLARSHIP IN ANATOMY AND PHYSIOLOGY.—An Annual Scholarship of the value of £80 a year, tenable for two years, is open to Students of the Univ. of Cambridge who have passed the 2nd M.B. Exam., and to Students of the Univ. of Oxford who have passed the 1st M.B. Exam. *Subjects:* Anatomy and Physiology, including Histology. Examination to take place in October.

THE TUTORS *assist all students, especially those who are preparing for examination, without extra fee; thus the necessity for obtaining private instruction is obviated.*

MEDICAL and SURGICAL REGISTRAR, RESIDENT MEDICAL OFFICER, DEMONSTRATORS of ANATOMY.—These valuable appointments are open to qualified men as they become vacant.

For further information apply to the Dean or the Resident Medical Officer, at the Hospital.

SIDNEY COUPLAND, *Dean.*

LIVERPOOL
ROYAL SOUTHERN HOSPITAL.

Honorary Consulting Surgeon—Mr. Robert Hamilton.
Physicians—Dr. J. Cameron, Dr. W. Carter, Dr. W. Williams.
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Anæsthetist—Dr. A. J. Chalmers. *Consulting Pathologist*—Professor R. W. Boyce.
Lecturer on Practical Medicine—Dr. C. J. Macalister.
Surgical Tutor—Mr. W. H. C. Davey. *Pathologist*—Dr. F. H. Barendt.
Medical Tutor and Bacteriologist—Dr. Hugh R. Jones.
Honorary Ophthalmic Surgeon—Dr. R. Williams.
Honorary Aural Surgeon—Dr. C. G. Lee *Laryngologist*—Dr. Permewan.
Dentist—Mr. J. Royston. *House Surgeon*—Mr. C. R. Edmondson.
Junior House Surgeons—Mr. J. A. Craig, Mr. J. R. Thompson.

200 Beds. Clinical Lectures given by the Physicians and Surgeons during the Winter and Summer Sessions. Clinical Clerkships and Dresserships open to all Students. Special Wards for Accidents and Diseases of Children. Rooms for a limited number of Resident Students.

Fees for Hospital Practice and Clinical Lectures—Perpetual £26 5s.; One Year, £10 10s.; Six Months, £7 7s.; Three Months, £4 4s. The practice of the Hospital is recognized by all examining Bodies.

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YORKSHIRE COLLEGE, LEEDS—Medical Department.

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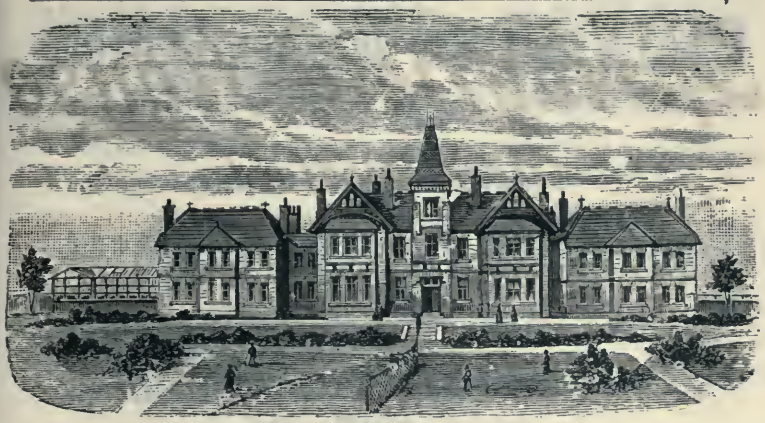

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THIS Institution is situated in the most healthy, pleasant, and picturesque part of Surrey. The extensive estate comprises over 200 acres of finely wooded grounds, and is well laid out in paths and drives.

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A Sanatorium for Ladies and Gentlemen suffering from Nervous and Mental Disorders.

Situated in a large park in a healthy and picturesque locality, easily accessible by cab from Bristol, or from Fishponds, Yate, or Patchway Stations.

Voluntary Boarders received without Certificates.

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Dr. Eager attends at 64, PARK STREET, BRISTOL, on Mondays and Thursdays, from 12 to 3 o'clock.

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ESTABLISHED IN 1841 BY

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This handsome Residence, standing in park-like grounds of forty acres, is appropriated to the reception of a limited number of Patients of the higher classes, who may be suffering from Mental and Nervous Affections, and who are under the constant care of the Resident Medical Superintendent.

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Retreat for Mentally Afflicted.

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A Sanatorium of the highest class for the treatment and care of gentlemen of unsound mind.

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A Private Home for the Care, Education and Treatment of Backward and Feeble-Minded Children of good social position. A limited number, capable of improvement, are received. The education is of a special character, adapted to the requirements of each child, who receives personal supervision, individual care and attention, as well as all the comfort and privacy of home life. The house stands on an elevated position in grounds of three acres, on gravel soil, and is close to Coombe Wood and Richmond Park. The air is bracing, and there are pleasant walks in the neighbourhood. It is reached by a drive (twelve miles) from London, or by the Norbiton Station on the South Western Railway, one mile distant.

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Fig. 1.

THE "Non-Run-Away" Bandage

(Fig. 1.) *Protected.*

Cardboard Boxes, each holding one dozen White Open Wove (6 yards long).

Width, 4 inches -	3 9	Width, 2½ inches -	2 6
,, 3 ,, -	2 9	,, 2 ,, -	1 10

Width, 1 inch Finger (3 yards long) - **10d.**

Fig. 2

PILL BOX SHOOT. *Registered No.* 244101.

(Fig. 2).

Hangs on the Wall, takes up very little room.

Holds 3 doz. 1 ounce; 4 doz half-ounce; 4 doz. 2 drachm; 5 doz. 1 drachm; 6 doz. half-drachm.

Size 37 ins. long by 7 ins. wide, and projects only 2 ins.

The **best, handiest, and most cleanly** way of keeping Pill Boxes for immediate use.

Price 10/6 empty.

Fig. 3.

½ Size.

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(Fig. 3.)

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Fig. 5.

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(Fig. 4.)

Used by Medical Men in fourteen Countries.

Projects from wall only 2¼ inches. Size, 1 ft. 8 in. by 8 ins. Holds 1 dozen 3 ins., 1 dozen 2 ins., 1½ dozen 1 in. (finger).

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At the back of Shoot are two wooden splints, suitable for arm or leg; also tin socket to form long thigh splint. Six yards half-inch ribbon plaster.

Fig. 4.

The ENEMA RACK. Fig. 5.

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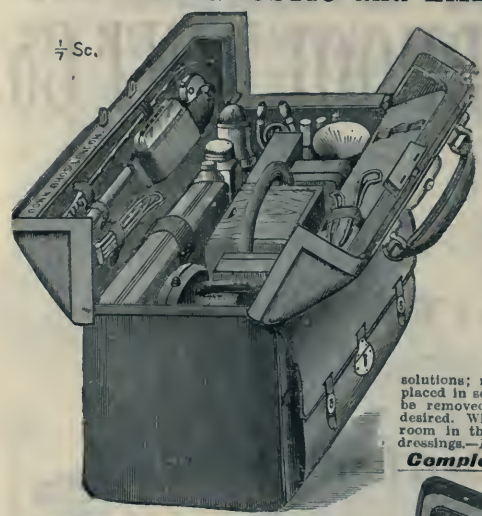

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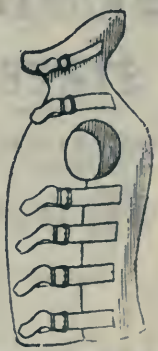

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FOR ALL DISEASES OF THE KNEE, OR FRACTURE.

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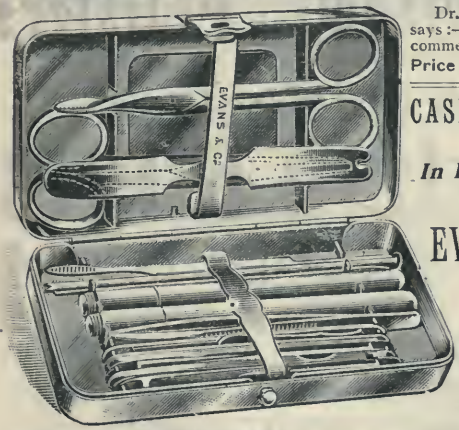

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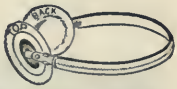

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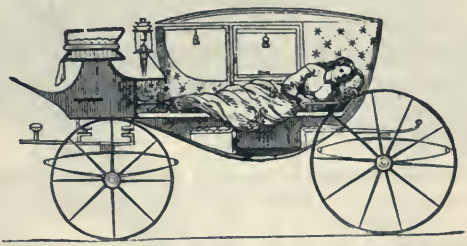

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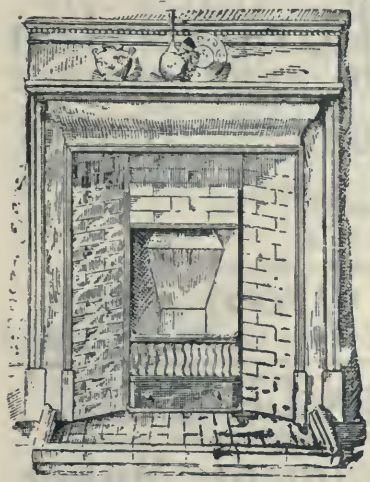

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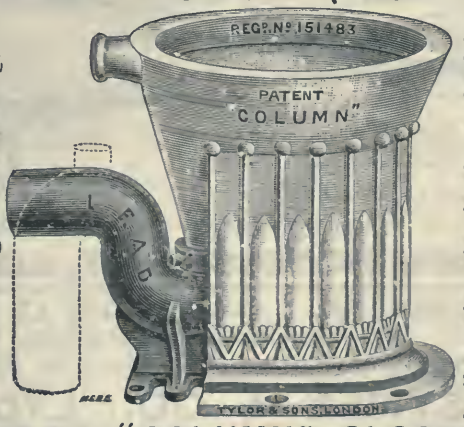

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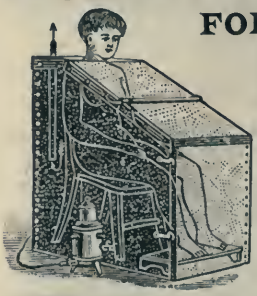

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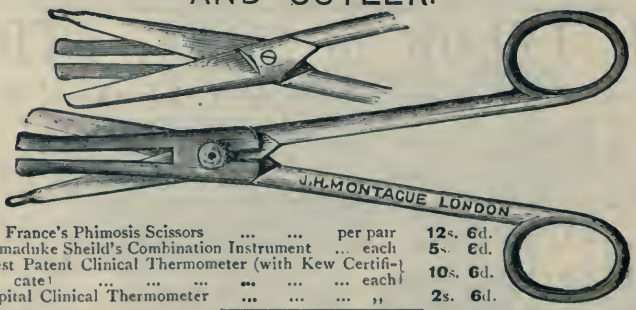

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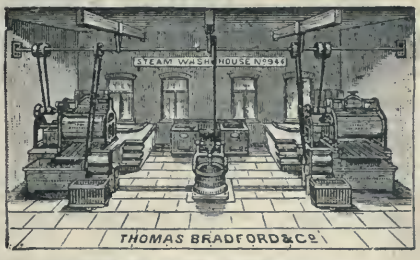

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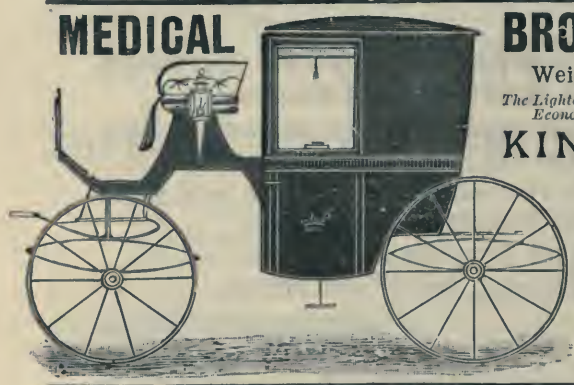

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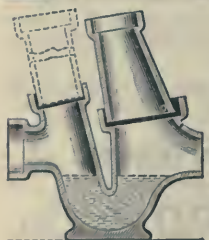

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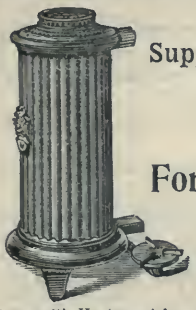

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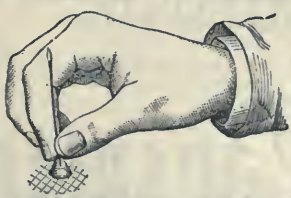

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TRANSLATED BY

NORMAN WALKER, M.D., F.R.C.P. ED.,

Assistant Physician for Dermatology, Edinburgh Royal Infirmary.

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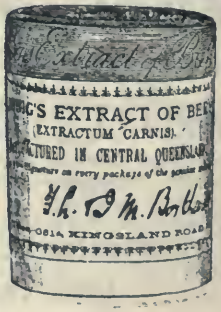

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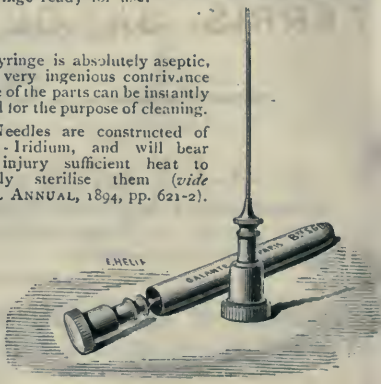

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